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A Revision of *Venturia* North of Central  
America (Hymenoptera: Ichneumonidae)<sup>1</sup>

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ABSTRACT

The porizontine genus *Venturia* is revised for America north of Central America. Fifty-two species were found within this area, forty-one of which were previously undescribed. Keys, descriptions and illustrations are given for all species. A phylogenetic analysis using the methods of Hennig was performed. Difficulties involving identification of the outgroup and the apparent presence of extensive homoplasy led to the discovery of only three monophyletic groups containing a total of sixteen species. The interrelationships of the remaining species, and of the three monophyletic groups, remain unresolved.

INTRODUCTION

*Venturia* is a large genus of porizontine ichneumonids, distributed worldwide but with the New World being one of the areas of greatest diversity. This study deals with the 52 species found in America north of

Central America. They are chiefly parasitoids of microlepidoptera that feed in concealed situations (leaf rolls, buds, and cases) but some are known or inferred to parasitize exposed larvae. Mixed mesophytic environments harbor the greatest number of species, although the genus is

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often found in areas that are more open and drier than is usual for porizontines. As most ichneumonid collecting has concentrated on fairly moist environments, this tendency toward drier areas is perhaps partly responsible for the relative scarcity of *Venturia* in collections. Excluding the common introduced granary species *Venturia canescens*, only about 1400 specimens were available for study.

Although relationships within the group of genera to which *Venturia* belongs are not resolved, *Venturia* is monophyletic. Attempts to elucidate the phylogeny of the Nearctic fauna have not been very successful, due to weak characters and a high degree of homoplasy. These factors, plus the relatively small number of specimens, preclude any meaningful biogeographical analysis.

#### ACKNOWLEDGEMENTS

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#### MATERIALS, METHODS & TERMINOLOGY

Specimens examined for this study were borrowed from or deposited in the following collections and I am indebted to the curators listed below. Acronyms used are either from Arnett & Samuelson (1969) or consistent with their style:

- Academy of Natural Sciences of Philadelphia (ANSP): Philadelphia, Pennsylvania (D. Azuma).
- American Museum of Natural History (AMNH): New York, New York (M. Favreau).
- British Museum (Natural History) (BMNH): London (M. Fitton).
- California Academy of Sciences (CASC): San Francisco (P.A. Arnaud, Jr.).
- Canadian National Collections (CNCI): Ottawa, Ontario (J.R. Barron).
- Cornell University (CUIC): Ithaca, New York (L.L. Pechuman).
- Clement E. Dasch Collection (CEDC): New Concord, Ohio.
- Florida State Collection of Arthropods (FSCA): Gainesville (H.V. Weems).
- Illinois Natural History Survey (INHS): Urbana (W.E. LaBerge).
- Los Angeles County Museum of Natural History (LACM): Los Angeles, California (R.R. Snelling).
- Louisiana State University (LSUC): Baton Rouge (J.B. Chapin).
- Michigan State University (MSUC): East Lansing (R.L. Fischer).
- Museum of Comparative Zoology (MCZC): Harvard University, Cambridge, Massachusetts (R.J. McGinley).
- National Museum of Natural History (USNM): Washington, D.C. (R.W. Carlson).
- Ohio State University (OSUC): Columbus (C.A. Triplehorn).
- Oregon State University (OSUO): Corvallis (J.D. Lattin).
- John M. Schmid Collection (JMSC): Ft. Collins, Colorado.
- Texas A. & M. University (TAMU): College Station (S.J. Merritt).
- Henry and Marjorie Townes Collection (HMTc): Gainesville, Florida.
- University of California, Berkeley (CISC): (L.E. Caltagirone).
- University of California, Davis (UCDC): (R.O. Schuster).
- University of California, Riverside (UCRC): (J.C. Hall).



University of Georgia (UGCA): Athens (C.C. Smith).

University of Kansas (SEMC): Lawrence (G.W. Byers).

University of Massachusetts (UMEC): Amherst (T.M. Peters).

University of Wisconsin (UWEC): Madison (S. Krauth).

David B. Wahl Collection (DBWC).

Washington State University (WSUC): Pullman (R.S. Zack).

The morphological terminology is mostly that of Townes (1969). I have used the terminology of Bohart & Menke (1976) and Michener (1944) for certain structures in order to help initiate a common terminology within the Hymenoptera. *Gena* is used in place of "temple", *malar space* for "cheek", *supraclypeal area* for "face", *hypocpimeron* for "speculum", *subalar ridge* for "subtegular ridge", and *scrobe* for "mesopleural fovea". The mesopleural depression immediately anterior and ventral to the hypocpimeron is referred to as the *scrobal groove* (fig. 2a). *Central area* is used for the combined areola-petiolar area of the propodeum. *Mesosoma* and *metasoma* are used to refer to the apparent thorax and abdomen, respectively. *First metasomal segment* applies to the second true abdominal segment. Reference to the orientation of the various parts of the body follows Townes (1969) in that the legs are considered to be stretched out horizontally at right angles to the body.

Coloration of the body parts, especially that of the metasoma, can be affected by the amount of oils on the specimen (from internal or other sources); oily specimens are generally darker and often exhibit irregular fuscous areas on the normally brownish red portions of the metasoma. Reference to metasomal color in the descriptions refers only to the tergites and first sternite.

These abbreviations are used in the text: *OOD* for "ocellocular distance"; *OD* for "ocellar diameter"; *FMS* for "first metasomal segment"; *T1*, *T2*, etc., for the first metasomal tergum and following terga and *S1*, *S2*, etc., for the first metasomal sternum and following sterna. The "ocellar diameter" refers to the greatest transverse measurement of either of the lateral ocelli.

When the lengths of the body, wing, and ovipositor are given, the values in parentheses are those of the holotype.

SEM photographs were made with a Phillips 501 Scanning Electron Microscope. Specimens were sputter-coated with a 200 Å gold-palladium coating.

Male genitalia were prepared in the following

manner. After a specimen was placed in a humidifying chamber overnight, the terminal segments of the metasoma were clipped off and soaked in room-temperature 10% KOH for approximately 12 hours. The genitalia were then disassociated from the remaining parts of the metasoma, briefly placed in dilute acetic acid, rinsed in distilled water, and transferred to glycerine in a storage container. The right gonoforceps and ninth sternum were then placed in glycerine jelly on a microscope slide under a cover slip and drawn. This procedure necessitates some distortion of the normally curved gonoforceps, but all specimens were uniformly prepared in this manner and allows accurate comparison of the apical notch of the gonoforceps. The gonoforceps and ninth sternum were then stored, along with the remaining parts of the genitalia, in glycerine in a genitalia vial pinned with the specimen.

A warning should be made at this time. Although I strove to make all measurements and descriptions as explicit as possible by the use of drawings and photographs, the user unfamiliar with porizontines should use discretion. The characters are subtle in many cases, and such things as surface sculpture or degree of granulation could be traps for the unwary. About 2000 specimens were examined, 640 of which belonged to *V. canescens*. When the more abundant species (*sokanakiakorum*, *micraulax*, *nigriscapus*, *erythropus*, *marjoriella*, etc.) are taken into consideration, it is obvious that most of the new species are based on relatively few specimens. I have tried to indicate intraspecific variation, but it remains a potential problem as regards recognition of many of the species. In all likelihood, reliable determinations can be made only with experience and comparison with determined specimens of a number of species, as well as consideration of the characters given in the descriptions.

I have used females as the basis for recognition of new species. Not only are they more numerous in collections than males, but they also provide more characters. Although I have examined males that undoubtedly belong to undescribed species, I have chosen not to describe them until they can be associated with females. The one exception is the previously described *leptogaster* Cameron, known only from male specimens; I have redescribed it. Except for this species, the diagnoses refer only to the female sex.

The species descriptions are divided into 13 numbered sections for ease of reference. The following are explanations of measurements and characters as needed.

1. The malar space is measured from the upper articulation of the mandible to the lower margin of the compound eye.

3. The head in frontal view is roughly triangular (fig. 20e), but is sometimes more rounded, as in figs. 19a-k. The ocellar diameter (OD) is measured across the transverse axis of the lateral ocellus at its widest point and in a plane parallel to the sloping surface of the ocellar triangle. The compound eyes are usually strongly bulging but are sometimes as in fig. 20m.

4. Genal width is measured in dorsal view as in fig. 3s, the value being a/b. Males almost always have the gena wider than in the females and usually with a value of 0.5.

5. The profile of the mesosoma and its major regions can be quite diagnostic for a species. The mesonotum can be strongly anteriorly produced (fig. 22b), weakly produced (fig. 24l), or of an intermediate nature. The same goes for the degree of elongation of the mesopleurum with the elongate condition as in fig. 24i and the weakly elongate as in fig. 24m. The subalar ridge is usually weakly rugosopunctate but is occasionally punctate and smooth. Some species are hard to place with respect to this character; if the punctures are distorted, I call the condition weakly rugosopunctate.

6. The shape of the lateral area of the pronotum is variable and useful, as is the strength of the rugae that parallel the collar. The condition of the surface of the upper corner of the lateral area can be: a) moderately to strongly granulate with few or no punctures (fig. 1a); b) predominantly granulate with more punctures concentrated along its margin; c) granulate with numerous punctures throughout, giving a shagreened appearance (fig. 1b-c); d) rugosopunctate with the punctures distorted (at least to some degree) by the rugae (fig. 1e-f), usually on a smooth surface but occasionally with some granulation on the rugae; e) numerous strong punctures on a smooth surface (fig. 1d). The collar is usually weakly rugosopunctate but occasionally is punctate on a smooth surface.

7. Mesopleural punctation is measured in the area immediately below the hypopimeron. The sculpture both here and on the upper corner of the pronotum is of the type referred to by Harris (1979) as granulate. This varies in strength from strongly granulate (appearing pebbled, fig. 2b-c) to weak (with only shallow grooves present) to absent (appearing smooth and polished at high [80x] magnification). Whenever surfaces are referred to as "smooth", this refers to a complete lack of granulation. Fig. 2d is intermediate between strong and weak and is

deemed moderate. Most species have the punctures deep and ranging in diameter from 0.1-0.2 OD. Such punctation is considered to be moderate. Coarse punctation refers to shallow punctures 0.2-0.3 OD. The punctures along the dorsal and posterior margins of the hypopimeron are diagnostic but subtle. They can be: a) absent; b) present but sparse and/or weak with only a few scattered punctures; c) strong and present along the dorsal and upper 0.5 of the posterior margin; d) strong and present along all of the margins. Fig. 2a shows the transverse rugae of the scrobal groove.

8. The areolar length is measured from the base to the juncture with the petiolar area (the latter usually well-marked by a constriction, although this is sometimes obscure) and the areolar width at its juncture with the petiolar area. The resulting value of the length divided by the width is used to determine whether the areola is elongate (2.0 or greater), somewhat elongate (1.1-1.6), or as long as wide. The constriction of the juncture of the areola-petiolar area is considered either strong (fig. 16f), moderate (fig. 16l), or weak (fig. 16e). These categories are sometimes hazy. The width and length of the propodeal neck are measured as in fig. 3r. In males, the carinae and general surface sculpture of the propodeum are usually more pronounced and the central area is usually narrower than in the female. While there are differences in the outlines of the propodea of different species, the problems of drawing each specimen in the same orientation and recognizing undefined edges (due to the sloping sides) should be kept in mind.

9. The width of the hind femur is measured at the mid-length. The longer of the two hind tibial spurs is used in the comparison of the hind tibial spur and the hind basitarsus.

11. The first metasomal segment (FMS) has a variety of shapes, ranging from relatively elongate with the postpetiole high (fig. 13u) to stout (fig. 13p). Although the endpoints are distinct, the intermediates can be hard to characterize. The length of the petiole is measured from its articulation with the propodeum to the spiracle; the postpetiole is measured from the spiracle to the apex of T1. Different species may have similar ratios of petiole/postpetiole lengths but different appearances due to the stoutness of the petiole and height of the postpetiole.

12. The degree of lateral compression of the metasoma can be weak (fig. 3i), moderate (fig. 3j), or strong (fig. 3k). Since the metasoma is occasionally distorted, a series of specimens of a species is helpful in making this interpretation.

In species which have T2 of the females



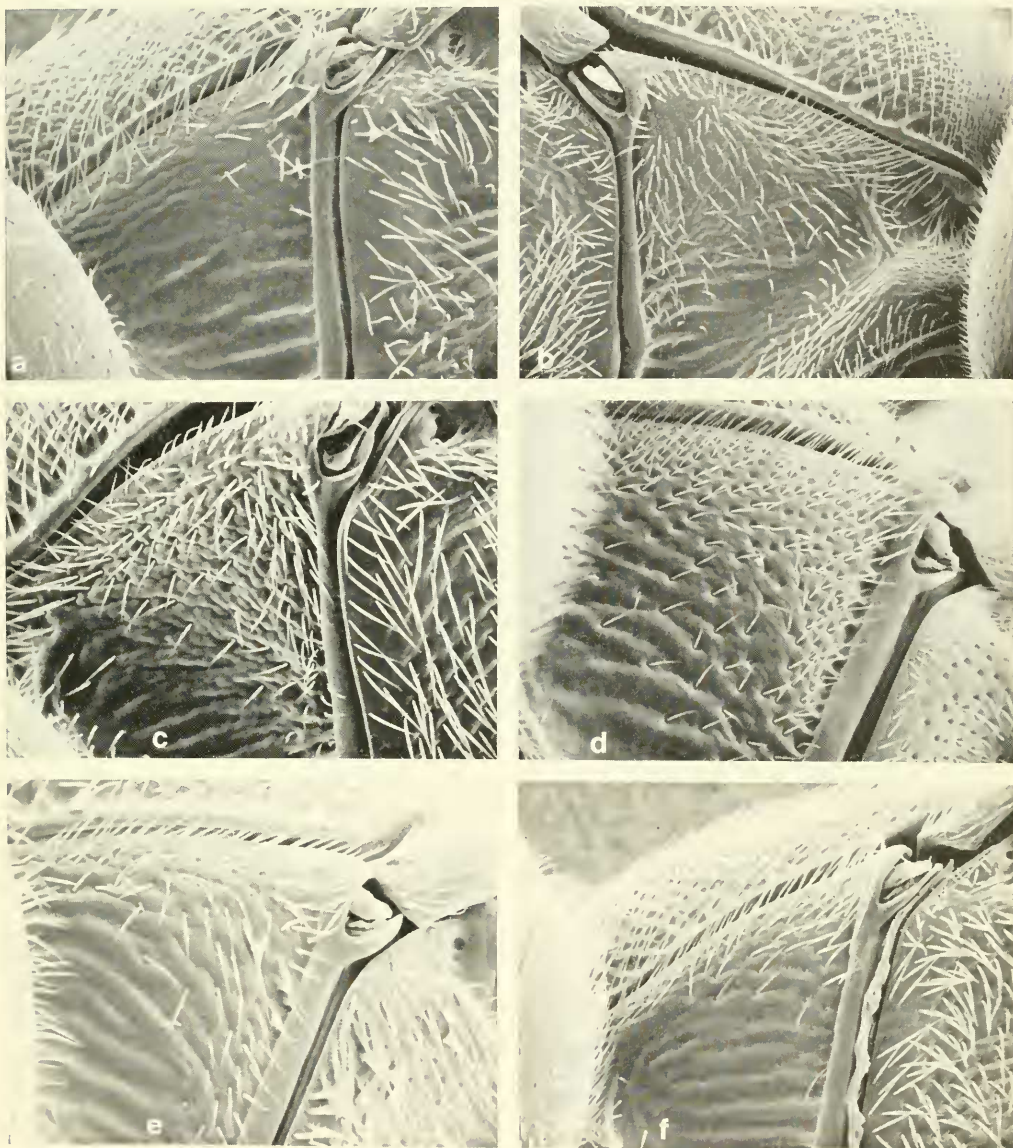


FIGURE 1. Upper corner of lateral area of pronotum. A. *Venturia eremna* Wahl, B. *V. erythropus* (Ash.), C. *V. micraulax* Wahl, D. *V. scitula* Wahl, E. *V. canescens* (Grav.), F. *V. sokanakiakorum* (Vier.).

shorter than is normal for the genus (such as *V. hadra*, *finlaysoni*, etc.), the males have the segment longer and comparable to those of males of more typical species.

13. Degree of curvature of the ovipositor is referred to as straight, weak (fig. 3a-c), moderate (fig. 3d-f), or strong (fig. 3g-h). The remark about distortion made in section 12 (above) applies here. The length, if its base is hidden by

enveloping terga, is estimated relative to the position of the apices of the valvifers and is believed to be accurate. The ovipositor apex is usually as in fig. 4e with deviations from that state noted under the individual species. Normally weakly laterally compressed, the apical half of the ovipositor is strongly compressed in *V. gaesata* and *V. platyura*.

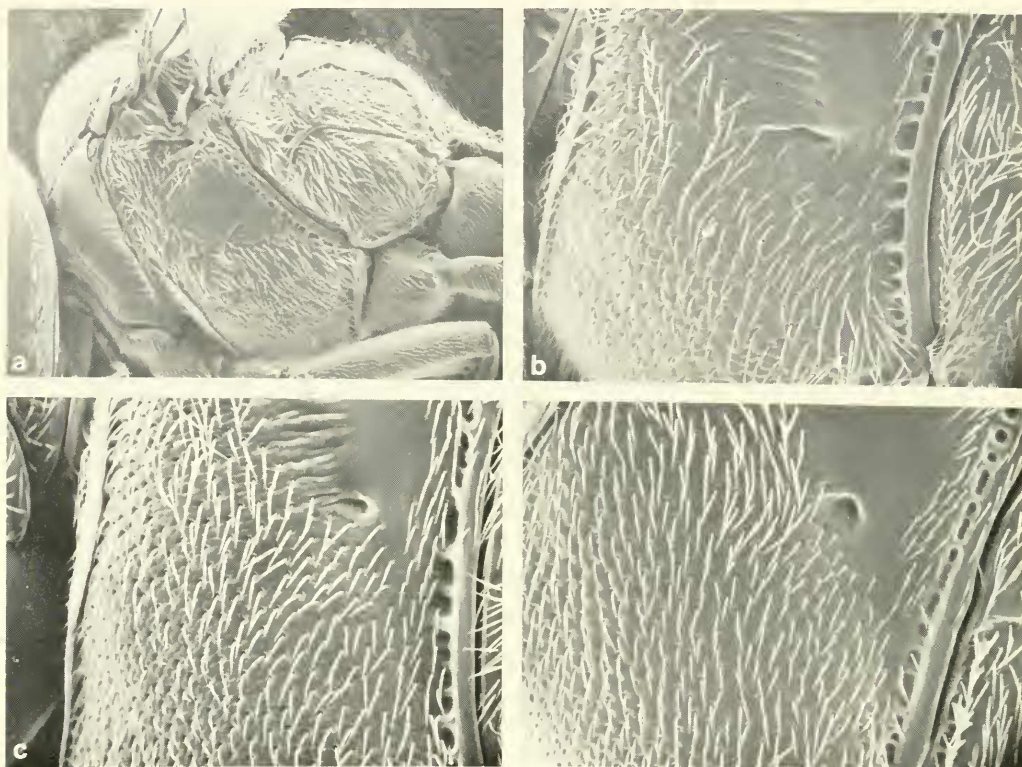


FIGURE 2. A, Lateral aspect of mesosoma of *Venturia sokanakiakorum* (Vier.). B-D, Ventral half of mesopleurum. B. *V. eremna* Wahl, C. *V. micraulax* Wahl, D. *V. canescens* (Grav.).

### TAXONOMIC HISTORY

#### Genus *Venturia* Schrottky

*Idechthis* Foerster, 1868. Verh. Naturh. Ver. Rheinlande 25: 154. Name preocc. by Huebner, 1821. Type species: (*Idechthis oahuensis* Ashmead) = *Campoplex canescens* Gravenhorst; first included by Ashmead (1901) and then monobasic.

*Venturia* Schrottky, 1902. An. Mus. Nac. Buenos Aires 8: 102. Type species: *Venturia argentina* Schrottky. Monobasic. Synonymized by Townes & Townes, 1966.

*Devorgilla* Cameron, 1907. Tijdschr. v. Entomol. 50: 51. Type species: *Devorgilla dilatata* Cameron. Original designation. Synonymized by Townes and Townes, 1966.

*Balcarcia* Brèthes, 1922. An. Soc. Cient. Argentina 93: 133. Type species: *Balcarcia bergi* Brèthes. Monobasic. Synonymized by Townes & Townes, 1966.

*Notamorphota* Blanchard, 1947 (1946). Acta Zool. Lilloana 3: 292. Type species: *Notamorphota timocraticae* Blanchard. Original des-

ignation. Synonymized by Townes & Townes, 1966.

*Exidechthis* Walkley, 1958. In Krombein *et al.*, United States Dept. Agric. Monog. 2, supp. 1, p. 59. New name for *Idechthis* Foerster.

*Slenda* Gauld, 1984. *An Introduction to the Ichneumonidae of Australia*, p. 282. Type species: *Slenda ocypta* Gauld. Original designation. New synonym.

*Venturia* may be readily distinguished from other porizontines by the following: eye not emarginate opposite antennal socket; gena relatively wide, not receding immediately behind eye; occipital carina joining hypostomal carina above base of mandible; mesopleural sulcus impressed as sharp groove; propodeum without median longitudinal depression, its apex usually reaching at least to middle of hind coxa; second lateral area almost always defined by carinae; petiole cylindrical, suture separating T1 from S1 in middle of lateral aspect and S1 of uniform depth throughout

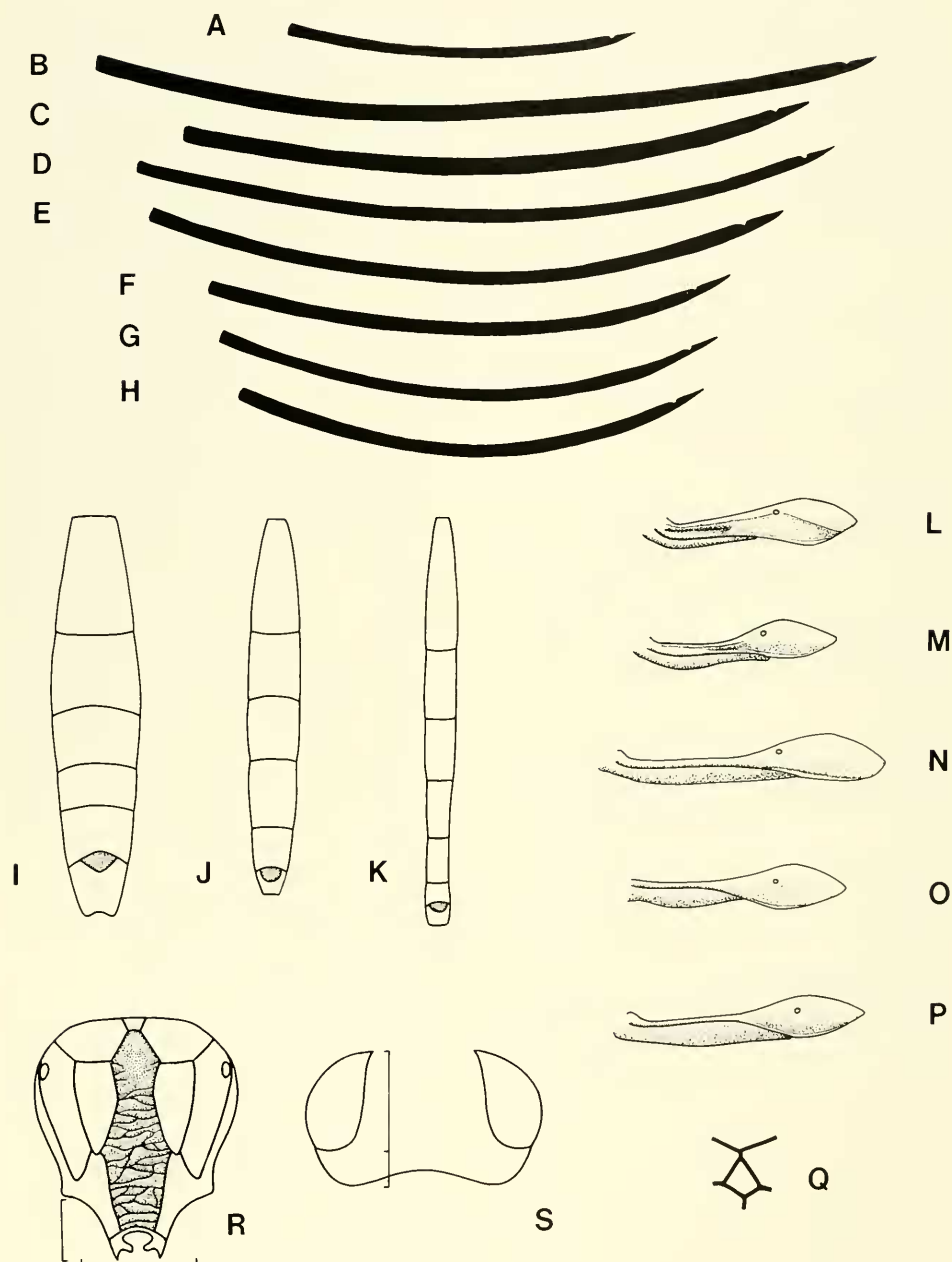


FIGURE 3. **A-H**, Lateral outline of ovipositor. A. *Venturia sokanakiakorum* (Vier.), B. *V. daschi* Wahl, C. *V. platyura* Wahl, D. *V. canescens* (Grav.), E. *V. portalensis* Wahl, F. *V. dreisbachi* Wahl, G. *V. eremna* Wahl, H. *V. gaesata* Wahl. **I-K**, Dorsal aspect of T2-7. I. *V. erythrogaster* Wahl, J. *V. portalensis* Wahl, K. *V. nigriscapus* (Vier.). **L-P**, Lateral aspect of first metasomal segment. L. *Campoplex* sp., M. *Sinophorus* sp., N. *V. nigriscapus* (Vier.), O. *Casinaria eupitheciae* (Vier.), P. *Casinaria* sp. **Q**, Areolet of *V. punctata* Wahl. **R**, Dorsal aspect of propodeum of *V. capulata* Wahl. **S**, Dorsal aspect of head *V. anchisteus* Wahl.



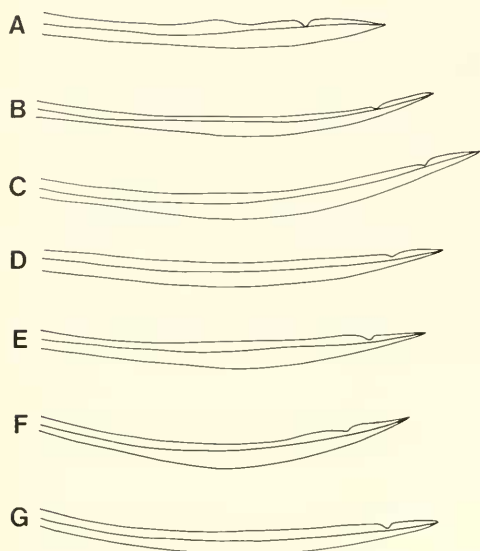


FIGURE 4. A-G, Lateral aspect of ovipositor apex. A. *Venturia dreisbachi* Wahl, B. *V. longicuspis* Wahl, C. *V. taneces* Wahl, D. *V. gaesata* Wahl, E. *V. eremna* Wahl, F. *V. licina* Wahl, G. *V. durangensis* Wahl.

its length; T1 without glymma; gonoforceps with weak to strong dorsal subapical notch on posterior margin; metasoma usually moderately or strongly laterally compressed, T2 1.8-2.3 as long as apical width. Ovipositor 1.4-3.2 as long as hind femur.

Species of *Venturia* described in the nineteenth century were placed in a variety of genera, most being in the catchall groups *Campoplex*, *Limneria* and *Nemeritis*. Foerster published the generic name *Idechthis* in 1868 but, as was the case for most of his ichneumonid genera, he did not indicate what species should be referred to it. Ashmead placed *oahuensis* Ashmead (= *Campoplex canescens* Gravenhorst) in *Idechthis* in 1901. In the following years, more species were correctly assigned to *Idechthis*, the earliest being *patulus* (Viereck, 1912). Cushman described *nigricoxalis* as a species of *Idechthis* in 1917, but stated in 1921 that he did not believe that it was generically distinct from *Campoplex* (Cushman & Gahan, 1921). Workers in the following years continued to use *Idechthis*, although species that would today be assigned to *Venturia* were sometimes placed in other

genera. This was due to the chaotic state of ichneumonid systematics in the first half of the century. Viereck used *Idechthis* beginning in 1912, as either a separate genus associated with *Casinaria* and related genera, or as a subgenus of *Casinaria*. In his description of *patulus* in 1912, he states that *Idechthis* is "apparently related" to *Nothanomalon*, which is today considered to be a synonym of *Casinaria*. He evidently had some trouble distinguishing these genera as is evidenced by two specimens of *V. scitula* that were determined by him as belonging respectively to *Neonortonia* and *Ischnoscopus*. *Neonortonia* is now regarded as a synonym of *Casinaria* and *Ischnoscopus* as a synonym of *Hyposoter*. Although the confusion with *Ischnoscopus* cannot be readily explained, the apical elongation of the propodeum was perhaps responsible for Viereck's troubles with *Idechthis* and *Casinaria* (H. Townes, pers. comm.; see discussion of generic relationships).

The studies of Horstmann (1973), Maheshwary (Gupta & Maheshwary, 1977), and my revision of a New World species group (Wahl, 1984), are the only ones that have dealt with the species of a region as members of *Venturia*. The numbers of species previously described from the various biogeographical regions are as follows:

Western Palearctic (Horstmann, 1973): 11  
Eastern Palearctic (Townes *et al.*, 1965): 5  
Nearctic (Carlson, 1979): 5

Neotropical (Townes & Townes, 1966; Wahl, 1984): 25

Indo-Australian (Gupta & Maheshwary, 1977): 35

Ethiopian (M. Townes, 1973): 8

Total (correcting for duplication and synonymies): 84

## BIOLOGY

As for most ichneumonids, knowledge of the biologies of Nearctic *Venturia* is extremely limited. Carlson (1979) stated that *Venturia* species, like those of *Campoplex*, parasitize microlepidoptera that feed in concealment, such as in leaf rolls, buds, and cases. My study supports his observation with the exceptions of *V. nigricapax* and *townesorum*, members of the *Nigriscap-*

us Group. They parasitize larger moths, such as Noctuidae and Arctiidae. Other species in the *Nigriscapus* Group probably use moths in the same size range as hosts. The following summarizes what is known of the host relationships of Nearctic *Venturia*:

*V. brachypropodealis* Wahl—Tortricidae.

*V. canescens* (Grav.)—*Anagasta kuehniella* (Zell.) [Pyralidae], *Plodia interpunctella* (Hbn.) [Pyralidae] (These are the most commonly encountered hosts; see Salt (1976) for a discussion of all known natural and experimental hosts).

*V. chnaura* Wahl—*Fascista cercerisella* (Chamb.) [Gelechiidae].

*V. daschi* Wahl—*Stenomoma* [Stenomidae]; unidentified tortricid sp.

*V. finlaysonae* Wahl—*Tetralopha applastella* (Hulst.), *T. asperatella* (Clem.) [Pyralidae].

*V. gelechiiae* (Ash.)—*Fascista cercerisella* (Chamb.) [Gelechiidae] (The information associated with the holotype states that it was reared from *Gelechia celtisella*, now in *Lithocolletes*, a gracillariid leaf miner which is too small to produce a wasp of this size; the name is probably a *lapsus* for *cercerisella*).

*V. hibiscellae* Wahl—*Chionodes hibiscella* (Busk) [Gelechiidae].

*V. marjoriella* Wahl—*Polyhymno luteostrigella* (Cham.) [Gelechiidae].

*V. micraulax* Wahl—*Herculia thymetusalis* (Wlk.) [Pyralidae], *Holcocerina immaculata* McD. [Blastobasidae].

*V. nigricalis* (Cush.)—*Euzophora ostricolor-ella* Hulst., *E. semifuneralis* (Walk.) [Pyralidae], *Grapholitha molesta* (Busk) [Tortricidae], *Synanthedon exitiosa* (Say), *S. pictipes* (G. & R.) [Sesiidae].

*V. nigriscapus* (Vier.)—*Acronicta interrupta* Guen., *Bomalocha* sp., *Catacola* sp., *Plathyphenia scabra* (F.), *Zale* sp. [Noctuidae].

*V. platyura* Wahl—*Platoeceticus gloveri* Pack. [Psychidae].

*V. townesorum* Wahl—*Pareuchaetes insulata* (Walker) [Arctiidae].

*V. tristis* Wahl—Unidentified larva from top of mammoth cactus, Nuevo Leon, Mexico [USNM].

undescribed species—a distorted female

and associated male ([USNM], "ex pupae Phycitidae; Nog. 88688 Mexico, at Nogales, Ariz.; 9/28/63; E. Wilson, J. Kaiser, 63-24679") were reared from a phycitine pyralid, many of which are stored products pests or bud worms.

unassociated male—*Meroptera praveella* (Grote) [Pyralidae] ([CISC], Ontario, Westree, emer. 18 Mar. 1966, F.I.S. S65-2404).

Some, but not all, species of *Campoplex* and *Venturia* spin their cocoons in the pupal remains of the host, unlike most Porizontinae which emerge from the host larva and spin the cocoon outside (Carlson, 1979). The following *Venturia* species were found to spin the cocoon inside the host pupa: *brachypropodealis*, *daschi*, *marjoriella*, *micraulax*, *nigricalis*, *nigriscapus*, and *townesorum*. The remaining species listed above emerge from the host larva.

Finlayson (1975) figured the larvae of eight species of *Venturia*, five of which were treated as undescribed species. Her *Venturia* sp. F is actually a species of *Sinophorus* and sp. D is *V. nigriscapus*. The remaining three species are assigned as follows: sp. B = *V. finlaysonae*, sp. C = *V. daschi*, sp. E = *V. brachypropodealis*.

*Venturia* species are found in greatest abundance in areas of mixed mesophytic vegetation, although H. Townes (pers. comm.) has noted that they are often found in environments (such as grasslands) that are drier than the usual habitats of porizontines. The species do not seem to be abundant in boreal or xeric environments.

#### RELATIONSHIPS OF *VENTURIA* WITH OTHER GENERA

Various authors have considered *Venturia* to be related to *Campoplex* and *Casinaria*. Townes erected the tribe Campoplegini (Townes *et al.*, 1961; now called Porizontini [Townes, 1971]) to include *Venturia*, *Campoplex*, *Sinophorus*, *Casinaria*, *Scenocharops*, and *Charops*. Sanborne (1981) resurrected *Sesioplex* from synonymy with *Campoplex*. Horstmann (1970) recognized that *Ichneumon moderator* L., the type species of *Porizon*, was a species related to these genera, regarding it and related species as tentatively belonging in *Venturia* (Horstmann, 1973). Gupta and Maheshwary (1977), Carlson

(1979), and other workers have considered *Porizon* to be a separate genus and I am treating it as such here. Gauld (1976) erected the genus *Sliochia* and indicated that its relationships were with *Echthronomas*, *Campoctonus*, and other porizontines that possessed a medioventral hair row on the hind basitarsus. On the basis of the structure of the first metasomal segment, I believe that it is related to *Campoplex* and associated genera. *Slenda* was described by Gauld (1984) and he stated that it was related to *Venturia*. I consider it to be a rather derived group of species in *Venturia* and have synonymized it.

Until generic relationships are better known in the Porizontinae, I prefer not to use Townes' tribal classification and will refer to his Porizontini as the *Campoplex* Group. I regard it as a monophyletic assemblage based upon the unique morphology of the first metasomal segment. The ancestral condition is found in *Campoplex* (and further modified in *Venturia*, *Charops*, etc.) with the suture separating T1 from S1 at the middle, or somewhat below the middle, of the petiole in the basal 0.3 (fig. 3l). S1 is produced basally. In cross section, the petiole is depressed-oval, or somewhat rectangular. The glymma is present only as a groove.

Generic relationships within the *Campoplex* Group are problematical. I shall first discuss the characters of each genus and then return to the problem of their interrelationships.

*Campoplex*: As presently regarded, there is no one character shared by all its members; it consists of various lineages that lack the characters of the more specialized genera in the *Campoplex* Group. Henry Townes (pers. comm.) believes that it is divisible into three groups: *Pseuderipternoides* Viereck, *Campoplex* s.s., and *Dioratica* Foerster. *Pseuderipternoides* has the gonoforceps elongate and shallowly emarginate on the upper posterior margin, an elongate propodeum, and a laterally flattened ovipositor with a slight dorsal nodus just before the apical notch. *Campoplex* s.s. has the central area broader than in either of the other two groups, the occipital carina usually meeting the hypostomal carina at the mandibular base, and the gonoforceps weakly emarginate in a few species. *Dioratica* has none of the above characters except for some species which possess emarginate gonoforceps, and others that have a nodus similar to *Pseuderipternoides*. It is probably paraphyletic.

*Sinophorus*: According to Sanborne (1984), *Sinophorus* is monophyletic on the basis of: 1) the elongate larval labial sclerite, 2) the length of the tip of the dorsal valve of the ovipositor, 3) the moderately to strongly arching discoidella

vein of the hind wing, and 4) the very wide areola. None of these characters, except 4, is unique to *Sinophorus*; they are scattered throughout *Campoplex* or other genera, although not in the above combination. The elongate larval labial sclerite is found in *Venturia* and *Sesioplex* as well (see below). *Sinophorus* and some species of *Campoplex* have the prelabial sclerite with the stem longer than the arm, while *Venturia* has them about equal in length (Finlayson, 1975). I am unable to polarize the character states at this time.

*Sesioplex*: According to Sanborne (1983), the only character which presently delimits the genus is the well-developed nodus immediately in front of the dorsal ovipositor notch, although the two Nearctic species have the second recurrent vein perpendicular to the subdiscoideus. As in *Sinophorus*, the petiolar suture is below the middle, a wide propodeal trough is present, and the basal 0.3 of the petiole is rectangular in cross-section. The gonoforceps is not emarginate. The larval labial sclerite is like that of *Sinophorus*.

*Venturia*: The apex of the propodeum is long, usually reaching the middle of the hind coxa or beyond. The structure of the first metasomal segment is unique (fig. 3n), with the petiolar suture in the middle for the length of the petiole, the petiole more or less circular in cross section throughout its length, and S1 of uniform depth and without any lateral grooves or impressions. *Campoplex*, *Sinophorus*, and *Sesioplex* usually have small but distinct grooves on S1 that parallel the petiolar suture. T1 is without the remnant groove of the glymma (such as is found in *Campoplex* or *Sinophorus*) or with only very faint traces of it (as in *V. micraulax*). The metasoma is moderately (occasionally strongly) compressed and T2 is elongate (2.2-2.8 as long as apical width), unlike the weakly compressed metasoma and short T2 (1.4-1.6 as long as apical width) of most *Campoplex* or *Sinophorus*. The gonoforceps is weakly to strongly emarginate. As in *Sinophorus*, the larval labial sclerite has an elongate ventral portion.

*Slenda*: Examination of the type species of *Slenda* (*S. acypeta*) as well as an undescribed species from Australia has convinced me that this genus represents a species group of *Venturia*. To confer generic status upon it would render *Venturia* paraphyletic and I am thus treating it as a synonym of that genus. The elongate propodeum, structure of the FMS, and compressed metasoma are all typical of *Venturia*. The derived characters of *Slenda* include the medially incised apical margin of the tergites, lack of an areolet, undifferentiated epipleurum of T3, and the



short compressed ovipositor. Although specimens of *Venturia serpentina* were not examined, the description in Gupta & Maheshwary (1977) reveals that the synapomorphies of *Slenda* appear to be present in this species as well.

*Porizon*: I do not agree with Horstmann's (1973) tentative assignment of this genus to *Venturia*. The first metasomal segment is like that of *Campoplex* except that the glymma is absent.

*Sliochia*: This is an unusual genus, resembling *Porizon* in some respects (lack of an areolet, shape of the central area, mesosoma with small and weak punctures on a strongly granulate surface) but is distinct in that the genal margin of the eye is slightly emarginate, the hypostomal and occipital carinae meet at the mandibular base, the scape is unusually long, the hind basitarsus has a medioventral hair row, and the marginal cell is short. The morphology of the first metasomal segment places it within the *Campoplex* Group.

*Casinaria*: This genus, along with *Charops* and *Scenocharops*, is quite distinct from other genera in the *Campoplex* Group on the basis of the short ovipositor (about equal to the apical depth of the metasoma), strongly receding gena, emargination of the eyes opposite the antennal socket, and a narrow lateral area of the pronotum with a long and flange-like epomia. The narrow gena and short ovipositor are correlated with to parasitism of naked larvae.

*Casinaria* has been associated with genera of the *Campoplex* Group, and especially with *Venturia*, on the basis of the similar first metasomal segment (fig. 3o-p), which is without a glymma, circular in cross section, and the petiole has the suture far above the middle for its entire length. Additionally, most of the species of *Casinaria* (and *Charops* and *Scenocharops* as well) have the propodeal apex prolonged between the hind coxae, as does *Venturia*. I was initially of the opinion that *Casinaria* was not related to *Campoplex* or *Venturia* and was related instead to genera such as *Hyposoter*, *Phobocampe*, etc., with the first metasomal segment being a product of convergent evolution. Examination of *Casinaria eupitheciae* Viereck, as well as some related species, showed it possesses several plesiomorphic characters, especially with regard to the first metasomal segment (fig. 3o). The FMS is shorter than is usual for most *Casinaria* and S1 is deeper in its basal 0.3. S1 also has a weak groove paralleling the petiolar suture. This is usually absent in more derived species. The propodeal carinae, which are usually partly absent in *Casinaria*, are strong and reveal a wide central area with the juncture of the areola-petiolar area

weakly constricted. The propodeal neck is almost absent and the metasoma is weakly compressed with T2 short (about 1.3 as long as apical width). I believe that these characters, especially the first metasomal segment and wide central areas, reflect the origin of *Casinaria* from a species like *Campoplex*. The resemblance of the FMS in *Venturia* and *Casinaria* is a result of convergence.

*Charops*: This genus is like the more derived species of *Casinaria*, as it has the propodeal apex prolonged, the gena narrowed, and the ovipositor short. It differs in that the petiolar suture runs along the upper margin of the petiole, the mesopleural sulcus is not impressed, the areolet is absent, and the second recurrent vein is perpendicular to the subdiscoideus.

*Scenocharops*: Similar to *Charops* except the second recurrent vein is inclivous, the areolet is present, the propodeal carinae are absent, and the base of the petiole has a distinct lateral flange.

A generally confusing picture emerges of the relationships of the genera (as presently delimited). Characters such as the subapical nodus of the ovipositor, the juncture of the occipital and hypostomal carinae at the mandibular base, the emargination of the gonoforceps, and the presence of a propodeal trough are spotty in their distributions. While *Pseudopterionoides*, *Campoplex* s.s., *Porizon*, *Sliochia*, and *Sinophorus* are each probably monophyletic, their relationships to each other and the probably paraphyletic *Dioratica* are unknown. In *Sesioplex*, the relationship of the two Nearctic species to the Palearctic species, based as it is on a character (subapical nodus of the ovipositor) found throughout *Dioratica*, is an open question. An intensive study of these groups on a world-wide scope will lead to some changes in classification.

*Venturia* is monophyletic, as witnessed by the unique structure of the first metasomal segment, prolonged apex of the propodeum, and moderately compressed metasoma and elongate T2. The structure of the FMS is the strongest argument for its monophyly. It is not possible at present to determine the sister-group of *Venturia*. The shape of the larval labial sclerite suggests possible relationships with *Sinophorus* and *Sesioplex*. Some species of *Campoplex* also have the metasoma moderately compressed and T2 elongate. A more detailed picture of the relationships of the subgroups of *Campoplex* is needed before more can be said, since some *Campoplex* larvae have tendencies toward an elongate labial sclerite. As mentioned in the section on biology, some *Campoplex* and *Venturia* have the unique habit (for porizontines) of

spinning their cocoon in the host pupa. The distribution of this character is spotty throughout the two genera but could be of use in determining relationships.

*Casinaria*, *Charops*, and *Scenocharops* form a monophyletic group, based on the emarginate eyes, dorsal position of the petiolar suture, narrow gena, short ovipositor, and narrow lateral area of the pronotum. While one might argue that these genera arose from a species of *Venturia*, with the petiolar suture being shifted dorsally and concomitant changes occurring due to parasitism of naked larvae, I think it unlikely. The shape of the larval labial sclerite of *Casinaria* is ovoid and without an elongate ventral portion, similar to the larval morphology in *Campoplex*. The *Casinaria* lineage probably originated from an ancestor with a first metasomal segment similar to that of *Campoplex*. The elongation of the propodeal neck and compression of the metasoma, found also in *Venturia*, would thus be parallelisms.

*Charops* and *Scenocharops* are each monophyletic but *Casinaria* is probably paraphyletic with respect to these genera.

#### RELATIONSHIPS WITHIN *VENTURIA*

Given the confused picture of generic relationships within the *Campoplex* Group, a problem arises of what to use as an outgroup for *Venturia*. I have decided not to use *Sinophorus* or *Casinaria* and related genera, considering them to be too specialized. The lineages within *Campoplex* s.l. have been used instead. When more than one state is found in the outgroup, the widely distributed state is considered to be plesiomorphic and the restricted state is considered to have arisen more than once. Although this is not in accord with the rigorous methods of Watrous and Wheeler (1981), it is the most practical course at this time. A list of characters that I initially considered follows, along with discussions as to their suitability.

1. Malar space. A value of 0.3-0.4 is found throughout the outgroup and is considered ancestral for *Venturia*. Values of: 1) 0.5 and 2) 0.6-0.7 are considered derived.

2. Head shape. Most *Venturia* have the head roughly triangular in frontal outline (fig. 20e) but a number of small species have the head roundish (fig. 19a-k). This former state is considered ancestral. Some smaller *Campoplex*, how-

ever, also have the roundish head shape and further research could reverse the decision.

3. Supraclypeal area. The outgroup has the surface granulosopunctate; the derived condition is coarsely rugosopunctate with weak granulation.

4. Genal width. In the outgroup and most *Venturia*, the gena is usually narrower in females. The derived condition is to have the gena wide (0.5) and flattened in both sexes.

5. Compound eyes ventrally convergent in females. This is apomorphic within *Venturia* (fig. 19a).

6. Mesonotal profile. A more or less strongly produced profile (as in fig. 22b) is found in the outgroup and most *Venturia*. Reduction of the profile has apparently occurred several times.

7. Mesopleural outline. This varies from weakly elongate (fig. 23a) to strongly elongate (fig. 23m). An intermediate shape is probably ancestral for *Venturia* as it is found in the outgroup as well.

8. Surface sculpture of upper corner of pronotum. A moderately to strongly granulate surface with few or no punctures is found in the outgroup and some *Venturia*. The following derived states are found: 1) predominately granulate with more punctures concentrated along the upper margins; 2) granulate with numerous punctures throughout, giving a shagreened appearance; 3) rugosopunctate with the punctures distorted (at least to some degree) by the rugae, usually without granulation; 4) numerous strong punctures on a smooth surface. It is unclear whether some of the states (esp. 1 & 2) are homologous for the species involved.

9. Mesopleural punctation. The condition in the outgroup is for the punctures to be 0.1-0.2 OD and deep. Coarse punctation is 0.2-0.3 OD and shallow.

10. Mesopleural granulation. This varies from 1) strong to 2) moderate and 3) weak or smooth. State 1 is found in the outgroup and some *Venturia*.

11. Hypoepimeral punctation. The punctures along the dorsal and posterior margins are absent in the outgroup, but whether the sparse condition (1) is antecedent to the dense condition (2) is unknown.

12. Metapleural surface. The outgroup has discrete punctures on a more or less granulate surface. The derived conditions are either: 1) completely coarsely rugosopunctate, or 2) with the upper half coarsely punctate and the lower portion coarsely rugosopunctate.

13. Scutellar surface. In the outgroup, the surface is similar to the metapleurum; the derived conditions are either: 1) the surface



coarsely rugosopunctate on a granulate surface, or 2) coarsely punctate on a smooth surface.

14. Propodeal carinae. While the propodeal carinae provide a rich variety of patterns and are of great value in distinguishing species, trying to find homologous patterns is extremely difficult. I tried arranging the forms by length (elongate, somewhat elongate, and as long as wide; see "Materials and Methods", section 8 of the descriptions) and by the distance to the base of the areola from the base of the propodeum. This led to artificial units and was abandoned. At present, only relatively few of the forms can be recognized as homologous. They are: 1) the somewhat elongate, pointed areola of the Hadra Group (fig. 16c-e), and 2) the pattern found in some of the *Nigriscapus* Group (fig. 18h). The outgroup has the areola as long as wide and close to the basal propodeal margin.

15. Areolar surface. The outgroup and some *Venturia* have the surface granulate. Derived states are: 1) weakly granulate with some rugae; 2) granulosopunctate; 3) smooth and rugose; 4) granulate with some scattered punctures.

16. Propodeal neck. The neck is absent in the outgroup. Three states can be found in *Venturia*: 1) 0.3-0.4 as long as wide; 2) 0.5 as long as wide; 3) 0.6-0.7 as long as wide. The polarity is unknown.

17. Hind femur. The ratio of length/width is usually from 4.2-5.7, but seems to be usually correlated with body size, the shorter femora being associated with smaller species.

18. Nervulus vein. In the outgroup, it is opposite or slightly distal to the basal vein; the derived condition is distal by about 0.3 its length.

19. Postnervulus vein. It is intercepted at or near the midlength by the subdiscoideus in the outgroup and most *Venturia*. The derived condition is interception at the anterior 0.3.

20. First metasomal segment. Although the FMS is significantly different from that of *Campoplex*, the ancestral condition is probably to have the petiole about 1.5 as long as the postpetiole (the value found in the outgroup), and postpetiole rather low; fig. 13f is an example of this state. A common derived state (1) is to have the petiole more elongate (1.7 as long as the postpetiole) and the postpetiole high; this has probably arisen several times. A further derivation (2) of this is found in the *Nigriscapus* Group in which the petiole is 1.9 as long as the postpetiole and the postpetiole is low. Another state (3) is found in the Hadra Group, in which the petiole is stout and the postpetiole is low (fig.

13o). In between these states are a variety of forms that do not distinctly fit into any category.

21. Second tergum. The condition in the outgroup is T2 short (around 1.4-1.6 as long as wide). The derived state (a) for *Venturia* is longer (2.2-2.8). A further derivation (b) is a value of 3.5.

22. Metasomal compression. A weakly compressed metasoma (fig. 3i) is found in the outgroup. *Venturia* appears to have a moderately compressed metasoma (fig. 3j) as an apomorphy (1). A strongly compressed metasoma (2) is found in some species of *Venturia* (fig. 3k).

23. Metasomal color. A completely fuscous metasoma is the usual condition in the outgroup. Four derived states are observed: 1) fuscous except for brownish red ventral lateral areas of T5-7; 2) T2, basal 0.5 of T3 and midlines of T4-7 fuscous, remainder brownish red; 3) brownish red with T2 (sometimes) and basal 0.5 of T3 fuscous; 4) completely brownish red except for the fuscous petiole. Although this character can be striking, H. Townes (pers. comm.) has found a high correlation of extensive brownish red with open habitats, suggesting that the color could be subject to a large number of parallelisms and reversals.

24. Ovipositor length. The value for the outgroup and most *Venturia* is 2.4-3.2 as long as the hind femur. Derived states are: 1) 1.4-2.2, and 2) 3.5-3.7.

In addition to the above characters, the following apomorphies are found within the *Nigriscapus* Group. See Wahl (1984) for full discussion.

25. The occipital carina is medially straight.

26. The transverse rugae on the polished lateral area of the pronotum adjacent to the collar area are absent or weak.

27. The upper corner of the lateral area of the pronotum has a smooth or polished surface and the punctures separated by about 0.5 their diameter.

28. The upper anterior region of mesopleurum has the area immediately adjacent to the scrobal groove with the transverse rugae absent or reduced, with few or no punctures; the surface granulation is absent so this area appears to be an extension of the hypopleuron.

29. The scape, pedicel, tegula, coxae, and hind femur are black-fuscous. Simultaneous possession of dark coloration on these parts is rare in *Venturia*.

30. The hind femur is fuscous; this appears independently of character 29.

31. Second lateral area of propodeum is short and rectangular.

Due to potential allometric effects or difficulty in establishing discrete characters, variables 2, 5, 6, 15, and 16 were not used. The remaining characters were used in the PAUP program of David Swofford (Illinois Natural History Survey). All character states were run unordered, as transformation series were almost impossible to determine. Despite the use of various options and deletions of certain characters (such as 7, 9, and 12), only three monophyletic groups could be found; the rest of the species belonging to groups that shifted in composition from run to run. Rampant homoplasy and unlikely character state transformations were the rule.

The failure to find stable groups may be because many characters were of low complexity and seemed prone to reversal and parallelism; surface granulation, metasomal color, hypoepimeral punctation, and length of the propodeal neck fall in this category. Any attempt to classify the shape of the central area of the propodeum in a rigorous way was unsatisfactory, leaving only two patterns that could be used for more than one species. As only 50% of the species have associated males, more extensive use of male genitalia was ruled out.

*Venturia canescens* was not considered in the analysis since it is an introduced Palearctic species.

Characters in the cladograms discussed below are numbered as in the above discussion; the various states are referred to as 12-1, 12-2, etc. Reversals are marked with an "X" instead of a tick mark.

The species in the Gelechiidae Group (*anareolata*, *chnaura*, *gelechiidae*, *marjoriella*, *masoni*, *mayi* and *texana*) are united by the ventrally convergent compound eyes. They retain a number of plesiomorphies (upper corner of pronotum granulate with few punctures, strongly granulate mesopleurum, and completely fuscous-dark brown metasoma). There is variation in the shape of the central area and FMS but further analysis was not undertaken.

The relationships of the Hadra Group (*brachypropodealis*, *erythrogaster*, *finlaysonae*, *hadra*, and *scitula*) are portrayed in fig. 5a; the short T2 (21) and weakly compressed metasoma (22) that unite these species are

interpreted as reversals to the state found in *Campoplex*. The stout FMS and short (0.3-0.4) propodeal neck are also synapomorphies of the group. *V. scitula*, *brachypropodealis*, and *erythrogaster* are united by the possession of a pointed, somewhat elongate areola with rugae on a smooth surface (14-1). The extreme reduction of fuscous on the metasoma (23-4) unites *brachypropodealis* and *erythrogaster*. Reduced metasomal fuscous areas (23-3) and a long (2.7-3.0) ovipositor were apparently possessed by the ancestor of the group. Although *longicuspis* also has a short T2 and a weakly compressed metasoma, the more elongate propodeal neck, long petiole and high postpetiole, and short (2.1-2.2) ovipositor leads me to believe that its resemblance is due to convergence.

The Nigriscapus Group has been expanded from my earlier conception (Wahl, 1984) to include *anchisteus*, *compacata*, and *sokanakiakorum* (fig. 5b). The synapomorphy for the group is the short (1.4-2.2) ovipositor (24-1). Relationships among the species treated in 1984 have not changed, but some of the characters thought to be synapomorphic for the Nigriscapus Group now subtend *anchisteus* as well. Ancestral metasomal coloration for the Nigriscapus Group s.l. is probably as in character 23-3; given this, the presence of 23-2 is apomorphic for a number of species.

KEY TO FEMALES OF VENTURIA NORTH OF CENTRAL AMERICA

- 1. Pronotum with upper corner of lateral area with surface granulate, punctures either sparse or scattered along margins (fig. 1a), not close and distorted; head with frontal outline often roundish (figs. 19a-k); length usually 4.5-7.0 mm; hypoepimeral punctation absent or sparse; metasoma with brownish red confined to T2-3 and narrow midlines of T4-7 ..... 2
- Pronotum with upper corner of lateral area with surface usually not granulate, either rugosopunctate (fig. 1e-f), closely punctate (fig. 1d),

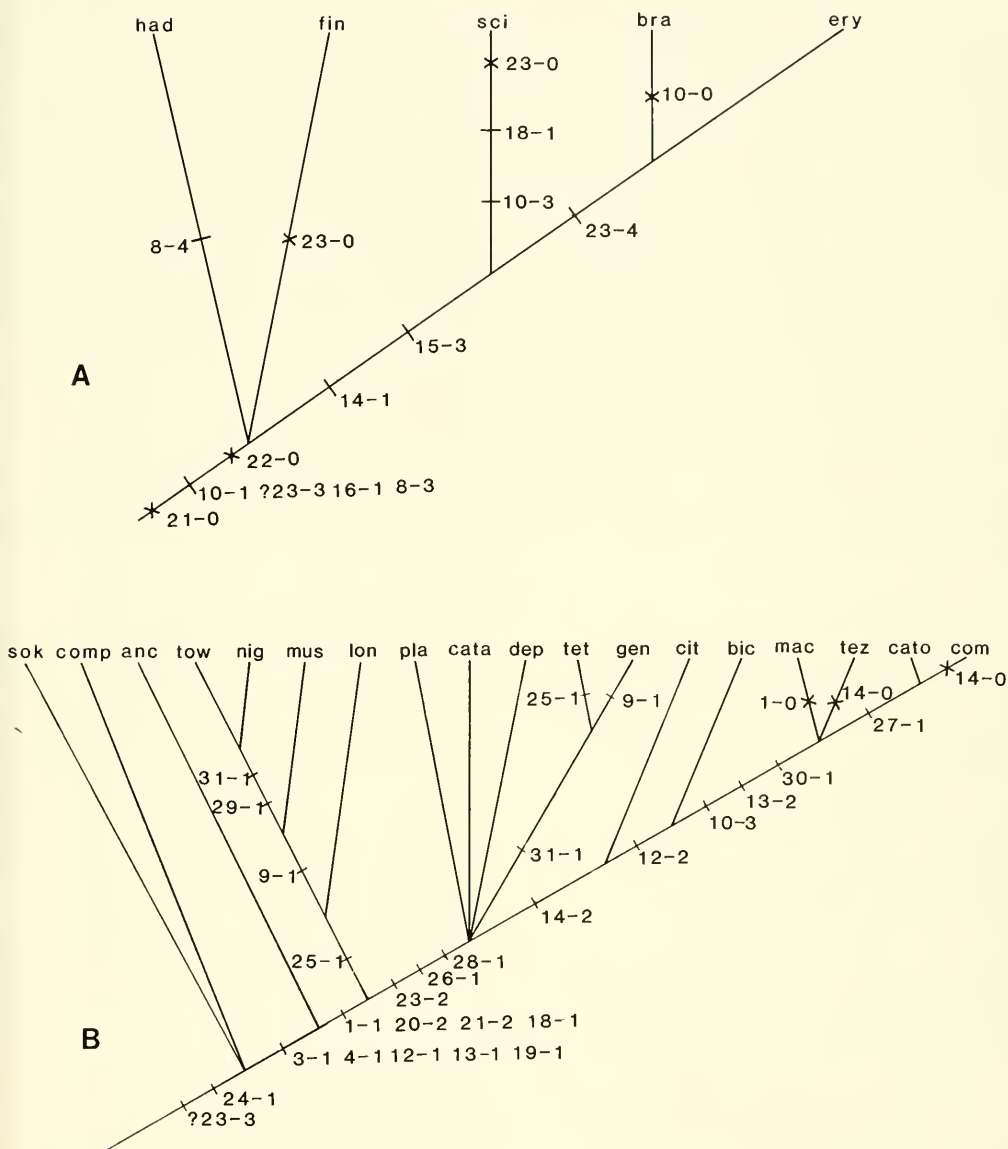


FIGURE 5. A, cladogram of Hadra Group. B, cladogram of Nigriscapus Group.

or else with dense shallow punctures on granulate surface (appearing shagreened, fig. 1b-c); if punctures concentrated along margins, they are separated by about 0.3 their diameter or contiguous, and somewhat distorted; head with frontal outline more elongate (fig. 20e); length usually 7.0 mm or longer; hypocpimeral punctation usually sparse to dense; metasoma usually with considerable amount of brownish red . . . . . 21

2. Metasoma fuscous except for brownish red areas of apex of T2 and lower lateral regions of T4-7 . . . . . 3
- Metasoma dark brown-fuscous except for brownish red apex of T2 . . . 9
3. Mesosoma deep brownish red; hind femur brownish red; FMS short and stout (fig. 13f) and piceous-deep brown; areolet present; propodeum with central area wide (fig. 15k) . . . . . *mulleola*
- Mesosoma fuscous; hind femur

- brownish red or dark brown-fuscos; FMS longer and fuscous; areolet present or absent; propodeum with central area sometimes narrower and constricted at juncture of areola-petiolar area . . . . . 4
4. Pronotum with lateral area having rugae absent or very weak, surface granulate; propodeum with juncture of areola-petiolar area strongly constricted (fig. 15j & 14u) . . . . . 5
- Pronotum with lateral area having rugae present; propodeum with juncture of areola-petiolar area variable. . . . . 6
5. Areolet absent; propodeum with central area as in fig. 15j, carinae all strong; ovipositor about 2.5 as long as hind femur; length about 4.3 mm . . . . . *pumila*
- Areolet present; propodeum with central area as in fig. 14u, carinae apically weaker; ovipositor about 3.0 as long as hind femur; length about 5.4 mm . . . . . *durangensis*
6. Areolet absent; genal width about 0.3; propodeum with first lateral area granulate with distinct punctures; mesopleurum moderately granulate; ovipositor about 2.0 as long as hind femur; FMS elongate with postpetiole low (fig. 13b) . . . . . *anareolata*
- Areolet present; genal width about 0.4; propodeum with first lateral area granulate without punctures or with punctures indistinct; mesopleurum strongly granulate; ovipositor 2.7-2.9 as long as hind femur; FMS shorter and postpetiole higher . . . . 7
7. Propodeum with neck about 0.8 as long as wide and with central area as in fig. 14k; mesonotal profile not produced (fig. 22e) . . . . . *mayi*
- Propodeum with neck about 0.6 as long as wide and with central area not as above, areola wider (figs. 15d & 15l); mesonotal profile strongly produced (figs. 22f & 24f). . . . . 8
8. Propodeum with central area as in fig. 15d, areola basally rounded; mesopleurum with punctures separated by 0.5-1.0 their diameter, on strongly granulate surface; pronotum with upper corner of lateral area strongly granulate with weak punctures . . . . . *amplareolata*
- Propodeum with central area as in fig. 15l; mesopleurum with punctures separated by 0.3-0.5 their diameter on weakly granulate surface; pronotum with upper corner of lateral area moderately granulate with scattered normal punctures . . . *capulata*
9. Fore and middle coxae dark brown-fuscos . . . . . 10
- Fore and middle coxae yellow (at least apical 0.5 of fore coxa) . . . . 15
10. Ovipositor 3.6-3.7 as long as hind femur . . . . . *spectabilis*
- Ovipositor 2.1-2.7 as long as hind femur; otherwise not as above . . . 11
11. Propodeum with areola as long as wide and granulate; length 5.5-7.0 mm; mesopleurum weakly-moderately granulate; hind femur brownish red; compound eyes ventrally convergent . . . . . *gelechiae*
- Not with above combination of characters . . . . . 12
12. Propodeum with areola elongate and juncture of areola-petiolar area strongly constricted (fig. 14x); compound eyes with inner ventral margins parallel; mesopleurum with punctures separated by 1.0-2.0 their diameter; hind leg with first trochanter, femur, and tibia, dark brownish red; ovipositor about 2.4 as long as hind femur . . . . . *pullata*
- Propodeum with areola shorter and juncture of areola-petiolar area not as constricted (figs. 14v, 15g, 16k); otherwise not as above . . . . . 13
13. T3-7 deep brownish red with lighter highlights; hind leg with first trochanter and femur light brownish red; length 7.6 mm . . . . . *latrunculus*
- T3-7 dark brown-fuscos; hind leg with first trochanter and femur often dark brown; length 3.4-4.7 mm . . . 14
14. Compound eyes with inner ventral margins parallel; hind femur light brownish red . . . . . *australis*
- Compound eyes ventrally convergent; hind femur light brownish



- red to dark brown-fuscous. . . . .  
 . . . . . *marjoriella*
15. Propodeum with areola as long as wide and junction of areola-petiole area weakly constricted (figs. 15e, 15g). . . . . 16  
 — Propodeum with areola somewhat elongate or elongate, and juncture of areola-petiole area moderately to strongly constricted (figs. 15a, 15b, 15g, 17j, 18l). . . . . 17
16. Pronotum with surface of upper corner with scattered punctures; propodeum with second lateral area weakly rugosopunctate; mesopleurum weakly to moderately granulate; length 5.4-7.1 mm . . . . *gelechia*  
 — Pronotum with surface of upper corner with punctures absent or sparse; propodeum with second lateral area granulate with regular punctures; mesopleurum strongly granulate; length 4.4-5.6 mm . . . . *marjoriella*
17. Propodeum with areola narrow (figs. 15b, 17j, 18l). . . . . 18  
 — Propodeum with areola wider (figs. 15a & 15g). . . . . 20
18. Propodeum with central area as in fig. 15b, base of areola near basal propodeal margin; ovipositor about 3.0 as long as hind femur . . . *chnaura*  
 — Propodeum with central area as in figs. 17j & 18l; ovipositor either 2.4 as long as hind femur and straight, or 2.8-2.9 as long as hind femur and strongly curved. . . . . 19
19. Propodeum with central area as in fig. 17j; ovipositor about 2.4 as long as hind femur and straight; mesopleurum with surface moderately granulate; length 5.1 mm . . . *texana*  
 — Propodeum with central area as in fig. 18l; ovipositor 2.8-2.9 as long as hind femur and strongly curved; mesopleurum with surface weakly granulate; length 6.0-6.4 mm. . . . . *masoni*
20. FMS with petiole having two weak dorsolateral grooves; ovipositor strongly curved and with weak dorsal nodus just before apical notch (fig. 4e); hind first trochanter fuscous; compound eyes with inner ventral margins parallel . . . . *eremna*  
 — FMS without dorsolateral grooves; ovipositor moderately curved and without nodus; hind first trochanter yellow; compound eyes ventrally convergent . . . . . *marjoriella*
21. Metasoma weakly compressed; T2 1.4-1.5 as long as apical width; propodeum with neck 0.3-0.4 as long as wide; FMS as in fig. 13o, petiole stout and postpetiole low; ovipositor about 3.0 as long as hind femur and not laterally compressed (Hadra Group). . . . . 22  
 — Not with above combination of characters. . . . . 26
22. Metasoma fuscous . . . . . 23  
 — Metasoma with fuscous coloration confined to petiole, or to T2 and basal 0.3 of T3. . . . . 24
23. Hind leg with first trochanter, femur, tibia, and tarsus dark brown; propodeum with areola elongate (fig. 16a) and granulate; mesopleurum with punctures separated by about their diameter . . . . . *finlaysonae*  
 — Hind leg with trochanters fuscous-black and femur, tibia, and tarsus deep brownish red; areola as long as wide and sharply pointed (fig. 16d), smooth with transverse rugae; mesopleurum with punctures separated by 0.3-0.5 their diameter . . . . *scitula*
24. Propodeum with areola elongate (fig. 16b) and granulate; T2 with basal 0.7 and T3 with basal 0.3, fuscous; mesopleurum weakly granulate . . . . . *hadra*  
 — Propodeum with areola somewhat elongate (fig. 16c & 16e) and smooth with transverse rugae; metasoma with fuscous coloration confined to petiole; mesopleurum with granulation weak or strong . . . . . 25
25. Mesopleurum weakly granulate; hind leg with trochanter yellowish; length 10.2-10.4 mm . . . . *erythrogaster*  
 — Mesopleurum strongly granulate; hind leg with trochanter dark brown-fuscous; length 7.7-8.0 mm . . . . . *brachypropodealis*
26. Ovipositor 1.3-2.2 as long as hind femur; metasoma moderately or



- strongly compressed, and with fuscous coloration either confined to T2 and basal 0.5 of T3, or to T2-3 and narrow midlines of T4-7 . . . . . 27
- Ovipositor almost always 2.5 as long as hind femur or longer; otherwise not as above . . . . . 37
27. Scutellum and metapleurum distinctly punctate; fore wing with nervulus opposite basal vein. . . . . 28
- Scutellum and metapleurum coarsely rugosopunctate; fore wing with nervulus distal to basal vein by about 0.3 length of nervulus . . . . . 29
28. Mesosomal profile as in fig. 24m; ovipositor with apex slightly up-curved; propodeum with central area as in fig. 18b. . . . . *compacata*
- Mesosomal profile as in fig. 24l, more elongate; ovipositor straight; propodeum with central area as in fig. 18c, areola narrower. . . . . *sokanakiakorum*
29. Fore wing with postnervulus intercepted at midlength by subdiscoideus; metasoma moderately compressed; T2 about 2.6 as long as apical width; malar space about 0.3 as long as basal mandibular width. . . . . *anchisteus*
- Fore wing with postnervulus intercepted at anterior 0.3 by subdiscoideus; metasoma strongly compressed; T2 about 3.2 as long as apical width; malar space about 0.5 as long as basal mandibular width. . . . . 30
30. Fore and middle coxae with basal 0.7 black or dark brown . . . . . 31
- Fore and middle coxae predominantly yellow, although with varying amounts of basal dark coloration . . . . . 32
31. Propodeal carinae weak apically, petiolar area with reticulate rugae (fig. 18e); mesopleurum weakly granulate; middle femur yellowish with apical 0.2 of dorsal surface brown; FMS with postpetiole brownish red, same color as T3-7 . . . . . *townesorum*
- Propodeal carinae uniformly strong, petiolar area with strong transverse rugae; mesopleurum strongly granulate; middle femur dark brown except for yellow median dorsal stripe; FMS with postpetiole fuscous or deep brown . . . . . *nigriscapus*
32. Scape ventrally yellow or reddish yellow. . . . . 33
- Scape ventrally dark brown-fuscous, sometimes with lighter apical area . . . . . 36
33. Scape reddish yellow ventrally, at least basally . . . . . 34
- Scape yellow ventrally . . . . . 35
34. Propodeum with central area as in fig. 18h; juncture of areola-petiolar area not constricted (or only weakly so in some males), median longitudinal carinae roughly parallel and often weak and irregular in height and outline; mesopleurum smooth or occasionally weakly granulate . . . . . some specimens of *macilenta*
- Propodeum with central area as in fig. 18i; juncture of areola-petiolar area constricted, median longitudinal carinae strong and rectangular in height and outline; mesopleurum smooth. . . . . *tezcatlipocai*
35. FMS with at least petiole and sometimes part of postpetiole piceous or black, postpetiole brownish red; propodeum with central area as in fig. 18h, petiolar area with transverse rugae; mesopleurum with punctures separated by 0.3-0.5 their diameter on weakly granulate or smooth surface; length 9.0-9.4 mm . . . *macilenta*
- FMS brownish red, although basal 0.6 can have traces of darkening; propodeum with central area as in fig. 18g, carinae strong basally and becoming weaker apically, petiolar area with reticulate rugae; mesopleurum with punctures separated by 0.2-0.5 their diameter on strongly granulate surface; length 12.9-13.7 mm. . . . . *musae*
36. Hind femur fuscous or dark brown; mesopleurum weakly granulate or smooth; propodeum with central area as in fig. 18h, median longitudinal carinae usually weaker than basal transverse carina; T3-7 with midlines narrowly fuscous . . *macilenta*

- Hind femur brownish red; mesopleurum moderately granulate; propodeum with central area as in fig. 18f, carinae uniformly strong; T3-7 rarely with hints of fuscous . . . . . *nigriscapus*
- 37. Metasoma completely dark brown or fuscous except for brownish red apex of T2 . . . . . 38
  - Metasoma brownish red, at least on lower lateral 0.5 of T4-7 . . . . . 40
- 38. Fore and middle coxae yellow . . . . . *hibiscellae*
  - Fore and middle coxae fuscous-black . . . . . 39
- 39. Ovipositor strongly curved, apex elongate (fig. 4c); mesopleurum weakly granulate; hind leg with trochanters and femur fuscous; propodeum with areola granulate with transverse rugae . . . . . *taneces*
  - Ovipositor moderately curved, apex not elongate; mesopleurum moderately granulate; hind leg with second trochanter yellow and femur dark brownish red; propodeum with areola granulate . . . . . *nickelseni*
- 40. Metasoma weakly compressed; T2 1.5-1.6 as long as apical width . . . 41
  - Metasoma moderately-strongly compressed; T2 greater than 1.9 as long as apical width . . . . . 43
- 41. Ovipositor 2.1-2.2 as long as hind femur, not strongly laterally compressed; pronotum with upper corner of lateral area rugosopunctate on smooth surface; propodeum with areola as long as wide, granulate with weak transverse rugae (fig. 17i) . . . . . *longicuspis*
  - Ovipositor 2.6-2.8 as long as hind femur, strongly laterally compressed; pronotum with upper corner of lateral area rugosopunctate on strongly granulate surface; propodeum not as above . . . . . 42
- 42. Propodeum with areola as long as wide, broad (fig. 15c); propodeal neck about 0.4 as long as wide; ovipositor with apex elongate (4d) . . . . . *gaesata*
  - Propodeum with areola elongate (fig. 17h); propodeal neck about 0.6 as long as wide; ovipositor with apex not elongate . . . . . *platyura*
- 43. Pronotum with upper corner having shallow punctures on strongly granulate surface, appearing shagreened (fig. 1b-c) and with no traces of rugosity . . . . . 44
  - Pronotum with upper corner rugosopunctate or closely punctate, on smooth or weakly granulate surface . . . . . 45
- 44. Propodeum with areola as long as wide or somewhat elongate (fig. 17k); ovipositor 2.6-3.1 as long as hind femur; length 5.1-8.6 mm . . . . . *micraulax*
  - Propodeum with areola elongate (fig. 17f); ovipositor 3.0-3.1 as long as hind femur; length 7.7-11.1 mm . . . . . *erythropus*
- 45. Propodeum with only basal transverse, pleural, and parts of apical transverse carinae present, surface uniformly covered by punctures on weakly granulate surface; ovipositor about 2.6 as long as hind femur; gena flattened and with width of 0.4; mesosomal profile as in fig. 24i. . . . . *punctata*
  - Propodeum with full complement of carinae, surface not uniformly punctate; otherwise not as above. . . . 46
- 46. Hind femur about 9.1 as long as wide; FMS with postpetiole elongate and low (fig. 14m); gena with width of 0.5, strongly receding (fig. 21s); length 10.5-11.6 mm . . . . . *prolixa*
  - Hind femur about 6.2 as long as wide or shorter; otherwise not as above. . . . . 47
- 47. Pronotum with upper corner having strong punctures concentrated on margins, separated by about 0.3 their diameter or contiguous, on granulate surface. . . . . 48
  - Pronotum with upper corner uniformly rugosopunctate or closely punctate, on smooth surface . . . . 49
- 48. Propodeum with central area as in fig. 18a, areola granulate; metasoma strongly compressed; middle femur brownish red, hind femur occasionally dark brown . . . . . *daschi*

- Propodeum with central area as in fig. 17l, areola granulate with transverse rugae; middle and hind femora dark brown . . . . *fuscifemorata*
- 49. Metasoma with T2-3, and at least midlines of T4-9, fuscous . . . . . 50
  - Metasoma with fuscous coloration confined to T2 or T3 . . . . . 52
- 50. Ovipositor strongly curved, apex with two nodi just before dorsal notch (fig. 4a); metasoma with brownish red coloration confined to lower lateral 0.5 of T4-7, otherwise fuscous; mesopleurum with normal punctures on moderately granulate surface; propodeum with areola granulate with weak transverse rugae . . . . . *dreisbachi*
  - Ovipositor not strongly curved and without apical nodi; otherwise not as above . . . . . 51
- 51. Propodeum with central area as in fig. 17b, areola granulate; mesopleurum with deep punctures separated by about 0.3 their diameter, on strongly granulate surface; hind trochanters yellow; subalar ridge weakly rugosopunctate . . . . *hibiscellae*
  - Propodeum with central area as in fig. 17a, areola narrower and smooth with weak transverse rugae; mesopleurum with normal punctures separated by 0.3-0.5 their diameter, on moderately granulate surface; hind trochanters often brownish; subalar ridge punctate . . . . . *canescens*
- 52. Ovipositor about 2.8 as long as hind femur, straight except for sharply upcurved apex, and cylindrical; propodeum with areola about as long as wide (fig. 18j); clypeus rather small and head roundish in frontal profile (fig. 21c); mesopleurum weakly granulate . . . . . *licina*
  - Ovipositor either uniformly curved or with some lateral compression; otherwise not as above . . . . . 53
- 53. T2 about 2.8 as long as apical width, metasoma strongly compressed; ovipositor about 2.4 as long as hind femur, straight; T3-7 brownish red; trochanters yellow; propodeal carinae as in fig. 18k. . . . . *floridensis*
  - Not with above combination of characters . . . . . 54
- 54. Coxae dark brown-fuscous; trochanters and remainder of hind leg brown; propodeum with central area as in fig. 16i, carinae irregular in height and outline, areola smooth with transverse rugae; length 8.4-11.4 mm. . . . . *nigricoxalis*
  - Fore and middle coxae predominately yellow; fore and middle trochanters yellow; otherwise not as above . . . . . 55
- 55. Mesopleurum with scrobe not a distinct pit; mesopleural suture with transverse rugae weak or absent; propodeum with apical 0.5 having carinae weak or absent; trochanters yellow; length 6.5-7.2 mm . . . *sculleni*
  - Mesopleurum with scrobe a distinct pit; mesopleural suture with transverse rugae present and strong; propodeum with carinae uniformly strong; hind leg with trochanters sometimes brown; usually larger . . . . . 56
- 56. Ovipositor 2.4-2.6 as long as hind femur; propodeum with juncture of areola-petiole area strongly constricted (fig. 16f); hind leg with trochanters yellow . . . . . *portalensis*
  - Ovipositor 2.9-3.2 as long as hind femur; otherwise not as above . . . 57
- 57. Propodeum with areola elongate and narrow (fig. 17e); antenna with 34 flagellomeres; hind leg with trochanters yellow; metasoma strongly compressed . . . . . *tristis*
  - Propodeum with areola wider (fig. 17g); antenna with 40-41 flagellomeres; hind leg with trochanters brown; metasoma moderately compressed . . . . . *micheneri*

#### KEY TO MALES OF *VENTURIA* NORTH OF CENTRAL AMERICA

1. Fore wing with postnervulus intercepted at anterior 0.3 by subdiscoides and nervulus distal to basal vein by about 0.3 length of nervulus . . . . . 2

- Fore wing with postnervulus intercepted at midlength by subdiscoideus and nervulus opposite basal vein . . . . . 3
- 2. Mesopleurum with punctures separated by about 0.3 their diameter on moderately granulate surface; metasoma with T3-7 brownish red except for fuscous of basal 0.3 of T3 . . . . . *nigriscapus*
- Mesopleurum with punctures separated by 0.3-0.5 their diameter on weakly granulate or smooth surface; metasoma with T3, plus midlines and portions of dorsal lateral areas of T4-7, fuscous, with remainder of metasoma brownish red . . . . . *macilenta*
- 3. Pronotum with upper corner of lateral area strongly granulate with punctures either absent or sparse; T2-7 dark brown-fuscous except for brownish red apex of T2 and occasionally all of T4; length 4.0-6.1 mm . . . . . 4
- Pronotum with upper corner of lateral area rugosopunctate or closely punctate on smooth or granulate surface; T2-7 usually with more extensive areas of brownish red; length usually larger than above range . . . 5
- 4. Areolet absent; T4 brownish red; gonoforceps and S9 as in fig. 26e-f . . . . . *anareolata*
- Areolet present; T4 dark brown-fuscous; gonoforceps and S9 as in figs. 25n-o, 27g-h, 29a-b, 29c-d, & 29g-h . . . *amplareolata*, *australis*, *eremna*, *marjoriella*, and *masoni*
- 5. Propodeum with only basal transverse, pleural, and parts of apical transverse carinae present, surface uniformly covered by strong punctures on granulate surface; S9 as in fig. 28i . . . . . *punctata*
- Propodeum with full complement of carinae, surface not uniformly punctate . . . . . 6
- 6. Pronotum with upper corner of lateral area having regular shallow punctures on strongly granulate surface, appearing shagreened (figs. 1b-c) . . . . . 7
- Pronotum with upper corner rugosopunctate or closely punctate, on smooth or (usually) weakly granulate surface . . . . . 9
- 7. Propodeum with areola as long as wide or somewhat elongate (similar to fig. 17k); hind leg with trochanters dark brown-fuscous; gonoforceps and S9 as in figs. 26g-h . . . . . *micraulax*
- Propodeum with areola elongate; hind leg with trochanters dark brown-fuscous, or second trochanter whitish yellow; gonoforceps and S9 otherwise (figs. 25l-m & 29e-f) . . . . 8
- 8. Propodeum with central area similar to fig. 17f; hind leg with coxa and trochanters dark brown-fuscous; gonoforceps and S9 as in figs. 29e-f . . . . . *erythropus*
- Propodeum with central area similar to fig. 17h; hind leg with apical 0.3 of coxa, and all of second trochanter, whitish yellow; gonoforceps and S9 as in figs. 25l-m . . . . . *platyura*
- 9. Coxae completely dark brown-fuscous; middle and hind femora dark brown . . . . . 10
- Not as above . . . . . 11
- 10. Middle and hind legs dark brown; S9 as in fig. 28f. . . . . *nigricoxalis*
- Middle and hind legs with trochanters whitish yellow except for dark brown of first hind trochanter and brownish red tibiae; brownish red; S9 as in fig. 25e . . . . . *fuscifemorata*
- 11. Pronotum with upper corner having strong punctures concentrated along margins, separated by about 0.3 their diameter or contiguous, on granulate surface; propodeal carinae similar to fig. 18a; gonoforceps and S9 as in figs. 25h-i . . . . . *daschi*
- Pronotum with upper corner uniformly rugosopunctate or closely punctate, on smooth surface; otherwise not as above . . . . . 12
- 12. Metasoma completely fuscous; propodeal carinae similar to fig. 16d; gonoforceps and S9 as in figs. 27a-d . . . . . *scitula*
- Metasoma with brownish red areas



- on T2-7; otherwise not as above . . . 13
13. Mesopleurum with scrobe not a distinct pit; mesopleural suture with transverse rugae weak or absent; propodeal carinae not as high or strong as usual for males, similar to fig. 17c; S9 as in fig. 27f . . . *sculleni*
- Mesopleurum with scrobe a distinct pit; mesopleural suture with transverse rugae present and strong; otherwise not as above . . . 14
14. Metasoma with postpetiole and T2-7 brownish red; propodeal carinae as in fig. 16c; gonoforceps and S9 similar to figs. 28a-b . . . *erythrogaster*
- Metasoma with T2 completely, and areas of T3-7, fuscous; otherwise not as above . . . 15
15. Propodeum with areola elongate and narrow, and juncture of areola-petiolear area moderately to strongly constricted (figs. 15i, 16f, & 18c) . . . 16
- Propodeum with areola not so constricted, ranging from elongate to as long as wide . . . 18
16. Gonoforceps with inner margins only shallowly emarginate (fig. 28g); S9 laterally angulate (fig. 28h) . . . *sokanakiakorum*
- Gonoforceps more deeply emarginate (figs. 25j & 26k); S9 laterally rounded (fig. 25k & 26l) . . . 17
17. Propodeal carinae as in fig. 15i and not high and strong as is usual for males; propodeum with base of areola adjacent to basal margin; gonoforceps and S9 as in figs. 25j-k . . . *leptogaster*
- Propodeal carinae similar to fig. 16f and high and strong; propodeum with base of areola distant from basal margin; gonoforceps and S9 as in fig. 26k-l . . . *portalensis*
18. Propodeum with areola about as long as wide; pronotum with upper corner closely punctate; mesopleurum with punctures separated by about their diameter on weakly granulate surface; gonoforceps and S9 as in figs. 26a-d . . . *finlaysonae* and *hadra*
- Propodeum with areola ranging from about as long as wide to elongate; pronotum with upper corner rugosopunctate; mesopleurum with punctures either closer together or on strongly granulate surface . . . 19
19. Propodeum with areola elongate, similar to fig. 17h; pronotum with upper corner of lateral area rugosopunctate on granulate surface; hind coxae with apical 0.3 whitish yellow; gonoforceps and S9 as in figs. 25l-m . . . *platyura*
- Propodeum with areola shorter or narrower; pronotum with surface of upper corner not granulate; otherwise not as above . . . 20
20. FMS with postpetiole brownish red; metasoma with basal 0.3 of T2 fuscous, remainder brownish red; mesopleural surface weakly granulate; gonoforceps and S9 as in figs. 25f-g . . . *licina*
- FMS with postpetiole dark brown-fuscous; metasoma with basal 0.8-0.9 of T2 fuscous-dark brown; mesopleural surface weakly-moderately granulate . . . 21
21. Propodeum with areola somewhat elongate (fig. 17i); S9 as in fig. 26j . . . *longicuspis*
- Propodea with areola elongate (fig. 18k); S9 as in fig. 28d . . . *floridensis*

#### DESCRIPTIONS OF SPECIES

##### *Venturia amplareolata*, new species (figs. 13g, 15d, 20a-b, 22f, 29c-d)

DIAGNOSIS. Similar to other small species with roundish heads, parallel inner ventral margins of the compound eyes, and sparsely punctate pronotal upper corners; it can be recognized by the yellow fore and middle coxae, dark brown hind femur and tibia, unusually large areola with a granulate surface, high postpetiole, and brownish red T4-7 except for the fuscous midlines.

FEMALE. *Structure*. 1. Malar space about 0.5 as long as basal mandibular width. 2. Antenna with 30 flagellomeres. 3. Frontal and dorsal outlines of head as in fig. 20a-b; OOD about 0.8. 4. Genal width about 0.4. 5. Mesosomal profile as in fig. 22f; mesonotal profile strongly



produced; subalar ridge weakly rugosopunctate. 6. Pronotum with epomia strong; lateral area with weak rugae on granulate surface; upper corner with weak punctures separated by 0.3-0.5 their diameter, on strongly granulate surface. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by 0.5-1.0 their diameter, on strongly granulate surface; scrobal groove with low rugae from subalar ridge halfway to scrobe; hypopimeron with punctures only on dorsal margin. 8. Propodeum with areola elongate and relatively large in relation to rest of propodeum, juncture of areola-petiolar area moderately constricted (fig. 15d); areola granulate, petiolar area with complete transverse rugae only on apical 0.5; first and second lateral areas with punctures weak or absent on granulate surface; propodeal neck about 0.6 as long as wide. 9. Hind femur about 4.7 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.5 as long as cell. 11. FMS with petiole about 1.7 as long as postpetiole (fig. 13g). 12. T2 about 2.3 as long as apical width; metasoma moderately compressed. 13. Ovipositor about 3.1 as long as hind femur, moderately curved. *Color*: Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, scape and pedicel ventrally, tegula, apical 0.2 of fore and middle coxae, trochanters except for brown posterior face of first hind trochanter, and dorsal basal spot of hind tibia. Fore and middle coxae otherwise brownish yellow. Remainder of fore and middle legs brownish red. Remainder of hind leg dark brown except for brownish yellow of basal 0.3 of basitarsus. FMS black except for piceous apical 0.5 of postpetiole. Basal 0.8 of T2, basal 0.5 and midline of T3, and midlines of remaining terga, fuscous; remainder of metasoma brownish red. *Length*: 6.0 mm; wing 3.4 mm; ovipositor 3.6 mm.

**MALE.** *Structure*: Similar to female except genal width 0.5; propodeum with central area narrower, carinae higher and stronger; right gonoforceps and S9 as in figs. 29c-d. *Color*: Similar to female except that basal 0.3 of fore coxa and basal 0.8 of middle coxa dark brown; first hind trochanter completely dark brown; T3-7 dark brown except for brownish red apical spot on midline of T6; gonoforceps dark brown. *Length*: 5.0 mm; wing 2.9 mm.

**TYPE MATERIAL.** Female holotype [HMTc], MEXICO—Oaxaca: 6 mi. S. Valle Nacional, 20 May 1971, 2000 ft., H. Howden. Paratype, 1M HMTc, same data as for holotype except collected 18 May 1971.

**COMMENT.** Valle Nacional is about 90 km N-NE of Oaxaca (city).

**ETYMOLOGY.** From the Latin *amplus*, large, and *areola*, an open space, in reference to the disproportionately large areola.

*Venturia anareolata*, new species

(figs. 13b, 15h, 19q-r, 22g, 26e-f)

**DIAGNOSIS.** This species can be distinguished from other species in the Gelechiiae Group by the narrow (0.3) gena, yellow fore and middle coxae, lack of an areolet, slender FMS with depressed postpetiole, fuscous metasoma except for brownish red areas of lower lateral 0.5 of T4-7, and ovipositor about 2.0 as long as the hind femur.

**FEMALE.** *Structure*: 1. Malar space about 0.3 as long as basal mandibular width. 2. Antenna with 29-30 flagellomeres. 3. Frontal and dorsal outlines of head as in fig. 19q-r; eyes ventrally convergent; OOD about 0.6. 4. Genal width about 0.3. 5. Mesosomal profile as in fig. 22g; mesonotal profile strongly produced; subalar ridge punctate. 6. Pronotum with epomia strong; lateral area with strong rugae except where obsolescent adjacent to front edge, on smooth surface; collar weakly granulate and impunctate; upper corner with sparse punctures on granulate surface. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by 0.3-1.0 their diameter, on weakly granulate surface; scrobal groove with strong rugae extending from subalar ridge to near scrobe; hypopimeron with punctures present on dorsal margin, sparse or absent on posterior margin. 8. Propodeum with areola about as long as wide, juncture of areola-petiolar area moderately constricted (fig. 15h); areola strongly granulate, petiolar area with fine transverse rugae; first lateral area with regular punctuation on granulate surface, second lateral area weakly rugosopunctate on granulate surface; propodeal neck about 0.6 as long as wide. 9. Hind femur about 4.7 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet absent. 11. FMS with petiole about 1.7 as long as postpetiole, postpetiole depressed (fig. 13b). 12. T2 about 2.1 as long as apical width; metasoma moderately compressed. 13. Ovipositor about 2.0 as long as hind femur, weakly curved. *Color*: Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, scape and pedicel ventrally, tegula, fore and middle coxae either completely or fore coxa with apical

0.5 and middle coxa with apical 0.3, extreme apex of hind coxa, trochanters except for brown of posterior face of first hind trochanter, dorsal surfaces of fore and middle tibia, and dorsal basal spot on hind tibia. Fore and middle legs otherwise brownish red. Coxae otherwise dark brown-fuscous. Remainder of hind leg brown, except for lighter areas on median of posterior face of femur, and median 0.3 of tibia. FMS black, except for deep brownish red extreme apex of postpetiole. Basal 0.9 of T2, and midlines and upper 0.5 of lateral areas of T3-7, fuscous. Metasoma otherwise brownish red. *Length*: 5.5-6.0 mm (5.6 mm); wing 2.8-3.0 mm (2.8 mm); ovipositor 1.9-2.1 mm (2.1 mm).

**MALE.** *Structure*: Similar to female except eyes not ventrally convergent; genal width 0.5; propodeum with central area narrower and carinae higher and stronger; right gonoforceps and S9 as in figs. 26e-f. *Color*: Similar to female, T3-7 dark brown except for brownish red of T4 and ventral 0.5 of lateral area of T4; gonoforceps fuscous. *Length*: 5.8-6.1 mm; wing 2.8-3.1 mm.

**TYPE MATERIAL.** Female holotype [HMTC], *UNITED STATES—Texas*: “Big Bend” (presumably Big Bend National Park, Brewster Co.), 1 Aug. 1975, 5000 ft., S. & J. Peck. Paratypes, *MEXICO—Nuevo Leon*: 1F [CNCI], 5 mi. S. Monterrey, 19 July 1965, H.F. Howden; *UNITED STATES—Arizona*: 1F [HMTC], Coconino Co., Oak Creek Canyon, 18 May 1947, H. & M. Townes; *Texas*: 2FF and 1M [TAMU], 1F [DBWC], Starr Co., Falcon State Park, 10 June 1969, V.V. Board; 1M [TAMU], 1M [DBWC], same data except collected 18 May 1978 by C. Porter and A. Cerbone.

**COMMENT.** A female specimen from Mexico (*Veraacruz*: Minatitlan, 26 Aug.-1 Sept. 1961, R.R. Dreisbach [MSUC]) seems to belong to this species, except that the ovipositor is about 3.3 times as long as the hind femur.

**ETYMOLOGY.** From the Latin *an-*, without, and *areolet*, in reference to the lack of an areolet.

*Venturia anchisteus*, new species  
(figs. 13u, 18d, 20m-n, 24k)

**DIAGNOSIS.** Distinguished from other species in the *Nigriscapus* Group by the wide (0.5) and flat gena, fuscous fore and middle coxae, interception of the postnervulus at the anterior 0.3, nervulus opposite the basal vein, rugosopunctate metapleurum, pattern of the central area of the propodeum (fig. 18d), and moderately compressed metasoma.

**FEMALE.** *Structure*: 1. Malar space about 0.3 as long as basal mandibular width. 2. Antenna with 44 flagellomeres (only one specimen with complete flagellum). 3. Frontal and dorsal outlines of head as in fig. 20m-n; OOD about 1.0. 4. Genal width about 0.5. 5. Mesosomal profile as in fig. 24k; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with epomia strong; lateral area with strong rugae on smooth surface; upper corner rugosopunctate, punctures separated by about 0.3 their diameter. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.2 OD, shallow and separated by about 0.5 their diameter, on moderately granulate surface; scrobal groove with strong rugae from subalar ridge to near scrobe; hypopimeron with close punctures on dorsal and upper 0.5 of posterior margins. 8. Propodeum with areola elongate, juncture of areola-petiolear area moderately constricted (fig. 18d); areola with transverse rugae on smooth surface, petiolear area with strong transverse rugae; first lateral area weakly rugosopunctate, second lateral area rugosopunctate; propodeal neck about 0.5 as long as wide. 9. Hind femur about 5.5 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.2 as long as cell. 11. FMS with petiole about 1.8 as long as postpetiole, postpetiole high (fig. 13u). 12. T2 about 2.6 as long as apical width; metasoma strongly compressed. 13. Ovipositor 2.0-2.1 as long as hind femur, almost straight. *Color*: Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, scape and pedicel except for brown dorsum, tegula, apical 0.3 of fore coxa and extreme apex of middle coxa, trochanters except brown dorsum of first hind trochanter, and dorsal basal spot of hind tibia. Coxae otherwise fuscous. Remainder of fore and middle legs brownish yellow. Hind femur brownish red; hind tibia and tarsi dark brown. FMS with petiole black, postpetiole deep brownish-red. Basal 0.4-0.5 of T2, basal 0.3 and midline of T3, fuscous; metasoma otherwise brownish red. *Length*: 8.9-9.1 mm (10.1 mm); wing 4.6-4.9 mm (5.3 mm); ovipositor 3.4-3.7 mm (4.0 mm).

**TYPE MATERIAL.** Female holotype [SEMC], *MEXICO—Morelos*: 7.3 mi. S. Yautepec, 3000 ft., 16 Aug. 1962, E. Ordway & M. Naumann. Paratypes, *MEXICO—Mexico*: 1F [MSUC], Tequesquitengo, 15 July 1961, R. & K. Dreisbach; *San Luis Potosi*: 1F [MSUC], “Valles” (prob. Ciudad de Valles), 8 Aug. 1954, R.R. Dreisbach.

**ETYMOLOGY.** From the Greek *anchisteus*,

next of kin, in reference to the close relationship of this species to *nigriscapus* and its relatives. It is a noun in apposition.

***Venturia australis*, new species**  
(figs. 13h, 14v, 19i-j, 22j, 27g-h)

**DIAGNOSIS.** Similar to other small species with roundish heads, parallel inner ventral margins of the compound eyes, and sparsely punctate pronotal upper corners; it can be distinguished by the wide gena (0.5), fuscous coxae and metasoma, light brownish red hind femur, somewhat elongate areola, strongly constricted juncture of the areola-petiolar area, and the ovipositor being 2.3-2.6 as long as the hind femur.

**FEMALE. Structure:** 1. Malar space about 0.4 as long as basal mandibular width. 2. Antenna with 25-26 flagellomeres. 3. Frontal and dorsal outlines of head as in fig. 19i-j; OOD about 1.0. 4. Genal width about 0.5. 5. Mesosomal profile as in fig. 22j; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with epomia strong; lateral area with strong rugae on weakly granulate surface; upper corner with scattered punctures on strongly granulate surface. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by 0.5-1.0 their diameter on strongly granulate surface; scrobal groove with strong rugae extending from subalar ridge to near scrobe; hypopimeron with punctures absent or sparse on dorsal and posterior margins. 8. Propodeum with areola somewhat elongate, juncture of areola-petiolar area strongly constricted (fig. 14v); areola with strongly granulate surface, petiolar area with fine transverse rugae; first and second lateral areas with scattered shallow punctation on granulate surface; propodeal neck about 0.5 as long as wide. 9. Hind femur about 4.6 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.4 as long as cell. 11. FMS with petiole about 1.6 as long as postpetiole (fig. 13h). 12. T2 about 2.0 as long as apical width; metasoma moderately compressed. 13. Ovipositor 2.3-2.6 as long as hind femur, weakly curved. **Color:** Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, scape ventrally, tegula, apical 0.3 of fore and middle coxae, trochanters except for brownish first hind trochanter, and dorsal basal spot of hind tibia. Fore and middle legs brownish red. Coxae otherwise dark brown-fuscous. Hind femur brownish red except for dark brown of apical 0.1; hind tibia and

tarsi brown, except for brownish red of median 0.3 of tibia and basal 0.8 of basitarsus. FMS black except for piceous 0.3 of postpetiole. Apical 0.2 of T2 brownish red; remainder of metasoma dark brown-fuscous. **Length:** 4.1-4.5 mm (4.2 mm); wing 2.6-2.7 mm (2.7 mm); ovipositor 1.9-2.1 mm (1.9 mm).

**MALE. Structure:** Similar to female except genal width 0.5; propodeum with central area narrower, carinae stronger and higher; postpetiole depressed; right gonoforceps and S9 as in figs. 27g-h. **Color:** Similar to female except first hind trochanter and hind femur dark brown; gonoforceps fuscous. **Length:** 4.4-4.5 mm; wing 2.6-2.7 mm.

**TYPE MATERIAL.** Female holotype [USNM], *UNITED STATES—Louisiana:* St. Andry Parish, G. R. Pilate. Paratypes, *UNITED STATES—Kansas:* 1F [DBWC], Douglas Co., 4 mi. N. Lawrence, 3 Sept. 1979, D.B. Wahl; *Louisiana:* 2FF [USNM], same data as for holotype; *Texas:* 1F [OSUO], Brazos Co., College Station, 17 May 1936, "student col."; 1M [HMTC], Denton Co., Roanoke, 31 May 1951, H.E. Evans; 1M [SEMC], Jeff Davis Co., Davis Mountains, 17 April 1954, L.D. Beamer; 1F [USNM], Victoria Co., Victoria, 25 Sept. 1906, J.C. Crawford.

**COMMENT.** In females, the first hind trochanter usually has the anterior face lighter than the posterior.

**ETYMOLOGY.** From the Latin *australis*, southern, in reference to the distribution of this species in the southern areas of the United States.

***Venturia brachypropodealis*, new species**  
(figs. 13q, 16e, 21y)

*Venturia* sp. E, Finlayson, 1975. Mem. Entomol. Soc. Canada 94: 24.

**DIAGNOSIS.** This species can be distinguished from others in the Hadra Group by the dark brown-fuscous first hind trochanter, somewhat elongate areola with the surface smooth and with weak rugae, strongly granulate mesopleurum, brownish red metasoma with fuscous markings confined to the petiole, and length (7.7-8.0 mm).

**FEMALE. Structure:** 1. Malar space about 0.4 as long as basal mandibular width. 2. Antenna with 37-38 flagellomeres. 3. Frontal outline of head similar to fig. 20o, dorsal outline of head as in fig. 21y; OOD about 0.8. 4. Genal width about 0.4. 5. Mesosomal profile similar to fig. 23g; mesonotal profile somewhat produced; mesosoma stout, propodeum short; subalar



ridge weakly rugosopunctate. 6. Pronotum with epomia strong; lateral area with rugae rather weak, on smooth surface; upper corner punctate, punctures separated by about 0.3 their diameter on smooth surface. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by 0.3-0.5 their diameter, on strongly granulate surface; scrobal groove with strong rugae extending from subalar ridge to scrobe; hypopimeron with punctures sparse on posterior margin, more abundant on dorsal margin. 8. Propodeum with areola somewhat elongate, juncture of areola-petiolar area weakly constricted (fig. 16e); areola with weak transverse rugae on smooth surface, petiolar area with rugae transverse centrally, reticulate adjacent to median longitudinal carinae; first lateral area with scattered punctures on granulate surface, second lateral area centrally with coarse punctures on granulate surface and rugulose adjacent to margins; propodeal neck about 0.3 as long as wide. 9. Hind femur about 5.0 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.2 as long as cell. 11. FMS with petiole about 1.8 as long as postpetiole (fig. 13q). 12. T2 about 1.2 as long as apical width; metasoma weakly compressed. 13. Ovipositor 2.3-2.4 as long as hind femur, moderately curved. *Color*: Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, ventral surfaces of scape and pedicel, tegula, apical 0.8 of fore coxa and apical 0.5 of middle coxa, fore and middle trochanters, and dorsal edge of front tibia. Remainder of fore and middle coxae dark brown. Remainder of fore and middle legs light brownish red. Hind leg with coxa fuscous, first trochanter dark brown, and remainder of leg brownish red. Metasoma with basal 0.9 of petiole and extreme base of T2, black; remainder brownish red. *Length*: 8.0 mm (7.7 mm); wing 4.9 mm (5.1 mm); ovipositor 4.4 mm (3.6 mm).

**TYPE MATERIAL.** Female holotype [HMTc], *UNITED STATES*—*Nebraska*: Cherry Co., Valentine National Wildlife Refuge, 7 June 1972, H. & M. Townes. Paratype, *CANADA*—*Quebec*: 1F [CNCI], Laval, emerged 24 Feb. 1941, "R.I.W. 40; 6970-B; ex Tortricidae".

**ETYMOLOGY.** From the Greek *brachys*, short, and *propodeum*, in reference to the short propodeum of this species.

***Venturia canescens* (Gravenhorst)**

(figs. 1e, 2d, 3d, 14p, 17a, 21w, 23m)

*Campoplex canescens* Gravenhorst, 1829. Ich-

neumonologia Europaea, vol. 3, p. 555. Male (Wroclaw; type not examined).

*Cryptus ductilis* Say, 1836. Boston J. Nat. Hist. 1: 233.

*Campoplex frumentarius* Rondani, 1877. Bull. Soc. Entomol. Italia 9: 169.

*Nemeritis gracilis* Tosquinet, 1896. Mem. Soc. Entomol. Belgique 5: 414.

*Omorga columbia* Ashmead, 1899. In Johnson, Bull. United States Dept. Agric., Div. Entomol. 20: 67.

*Idexthis oahuensis* Ashmead, 1901. Fauna Hawaiiensis, vol. 1, p. 355.

*Lathrostizus insularis* Ashmead, 1901. Fauna Hawaiiensis, vol. 1, p. 355.

*Idexthis ephestiae* Ashmead, 1903. In Fletcher, Ann. Rpt. Entomol. Soc. Ontario 33: 86.

*Linnerium garrulum* Cameron, 1905. Rec. Albany Mus. 1: 315.

*Amorphota ephestiae* Froggatt, 1912 (April). Agric. Gaz. New South Wales 23: 209.

*Amorphota ephestiae* Cameron, 1912 (August). Proc. Linn. Soc. New South Wales 37(1): 187.

*Mesochorus australicus* Girault, 1925. Queensland Agric. J. 24: 541.

*Linnerium christinae* Cheesman, 1928. Ann. Mag. Nat. Hist. (10)1: 191.

*Angitia pyraustae* Uchida, 1930. Insecta Matsumurana 4: 129.

*Angitia compressa* Hedwig, 1962. Nachr. Nat.-Mus. Aschaffenburg 68: 94.

**DIAGNOSIS.** This species can be recognized by the narrow (0.3) gena, rugosopunctate pronotal upper corner, punctate subalar ridge, elongate mesopleurum, yellow fore and middle coxae, brown or yellow hind trochanters, deep brownish red to dark brown hind femur, elongate narrow areola distant from the basal propodeal margin, low postpetiole, and brownish red T4-7 except for the fuscous midlines.

**FEMALE. Structure:** 1. Malar space about 0.3 as long as basal mandibular width. 2. Antenna with 35-38 flagellomeres. 3. Frontal outline of head similar to fig. 20o, dorsal outline as in fig. 21w; OOD about 0.6. 4. Genal width about 0.3. 5. Mesosomal profile as in fig. 23m; mesonotal profile somewhat produced; subalar ridge punctate. 6. Pronotum with strong epomia; lateral area with strong rugae extending to lower corner, on smooth surface; upper corner rugosopunctate, punctures separated by about 0.3 their diameter. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by 0.3-0.5 their diameter, on weakly to moderately granulate surface; scrobal groove with strong rugae halfway to scrobe; hypopimeron with close

punctures on dorsal and posterior margins. 8. Propodeum with areola elongate, juncture of areola-petiole area weakly constricted (fig. 17a); areola with fine transverse rugae on granulate surface, petiole area with strong transverse rugae; first lateral area densely punctate on weakly granulate surface, second lateral area rugosopunctate on granulate surface; propodeal neck about 0.6 as long as wide. 9. Hind femur about 5.2 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.3 as long as cell. 11. FMS with petiole about 1.6 as long as postpetiole (fig. 14p). 12. T2 about 2.1 as long as apical width; metasoma moderately compressed. 13. Ovipositor 2.8-3.1 as long as hind femur, moderately curved. *Color*: Head and mesosoma black, the following whitish yellow: mandible except dark brown of base and apex, ventral surfaces of scape and pedicel, palpi, fore and middle coxae except for dark brown of extreme base, fore and middle trochanters, and tegula. Remainder of fore and hind legs light brownish red. Hind leg varying from completely dark brown except for whitish yellow of second trochanter, to having trochanters yellow with dorsum of first trochanter brown, femur and tibia brownish red, with basal 0.3 of femur and sub-basal and apical bands of tibia slightly darker. FMS black with postpetiole deep brownish red. T2, basal 0.5 of T3, and at least midlines and usually part of upper lateral areas of T4-8, ranging from fuscous to brown; remainder of metasoma light brownish red. *Length*: 5.0-9.0 mm; wing 3.2-5.1 mm; ovipositor 3.2-5.2 mm.

**MALE.** Based upon examination of one male [HMTc] from France (*Bouches-du-Rhone*: La Ciotat, 28 July 1963, J.F. Aubert) and eight males [CISC] from an insectary culture of *Ectomyelois ceratoniae* from Spain (*Alicante*: Denia, Sept. 1966). *Structure*: Similar to female, antenna with 32 flagellomeres; genal width 0.4; propodeum with carinae stronger and higher. *Color*: Similar to female, second hind trochanter ranging from brown to completely yellow, hind femur brownish red with base and apex slightly darker; hind tibia dorsally, and hind tarsi, dark brown; FMS black; T2-3, and midlines and upper lateral areas of T4-7, dark brown; gonoforceps brown; remainder of metasoma brownish red.

**SPECIMENS EXAMINED.** 678 females and nine males.

**DISTRIBUTION.** Found throughout the Nearctic, usually as a parasitoid of caterpillars feeding on stored products in warehouses and similar situations. It also attacks hosts outdoors; see below.

**COMMENT.** Some specimens have the normally fuscous markings of the hind coxa, FMS, and terga dark brown with only with the basal part of the petiole fuscous. One specimen had the normally black head and mesosoma deep brownish red.

Three specimens were caught in a Malaise trap at New Concord, Ohio [CEDC], and Carlson (1979) reports the record of *canescens* being reared from a species of *Ephestia* in a bumblebee nest. Salt (1975) reviewed the literature on the hosts of *canescens* and concluded that the wasp can find and attack hosts outdoors. Pyralidae seem to be especially susceptible to parasitization. According to Carlson (1979), naturally occurring males of *canescens* are unknown in the Nearctic, found occasionally in Europe, and are more common in the Mediterranean area.

### *Venturia capulata*, new species

(figs. 14f, 15l, 21a-b, 24f)

**DIAGNOSIS.** This species can be distinguished from others with roundish heads, parallel inner ventral margins of the compound eyes, and sparsely punctate pronotal upper corners by the predominantly yellow fore and middle coxae, light brownish red hind femur, shape of the areola (fig. 15l), and brownish red T4-7 except for the fuscous midlines.

**FEMALE.** *Structure*: 1. Malar space about 0.3 as long as basal mandibular width. 2. Antenna with 32 flagellomeres (only one specimen with complete flagellum). 3. Frontal and dorsal outlines of head as in fig. 21a-b; OOD about 1.0. 4. Genal width about 0.3. 5. Mesosomal profile as in fig. 24f; mesonotal profile strongly produced; subalar ridge punctate. 6. Pronotum with epomia strong; lateral area with strong rugae on smooth surface; upper corner with scattered punctures on weakly granulate surface. 7. Mesopleurum with punctures in central region immediately below hypopleuron about 0.1 OD, separated by 0.3-0.5 their diameter, on weakly granulate surface; scrobal groove with strong rugae extending from subalar ridge to scrobe; hypopleuron with sparse punctures on dorsal and posterior surfaces. 8. Propodeum with areola elongate, juncture of areola-petiole area moderately constricted (fig. 15l); areola with granulate surface, petiole area reticulostriate; first lateral area with sparse punctures on granulate surface, second lateral area weakly rugosopunctate on granulate surface; propodeal neck about 0.6 as long as wide. 9. Hind femur about 5.0 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus.

10. Areolet petiolate, stalk about 0.4 as long as cell. 11. FMS with petiole about 1.5 as long as postpetiole (fig. 14f). 12. T2 about 2.1 as long as apical width; metasoma moderately compressed. 13. Ovipositor 2.6-2.8 as long as hind femur, weakly curved. *Color*: Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, scape ventrally, tegula, apical 0.7 of fore and apical 0.3 of middle coxae, extreme apex of hind coxa, trochanters, dorsal surface of fore tibia, and dorsal basal spot of hind tibia. Remainder of fore and middle coxae dark brown. Hind coxa otherwise fuscous. Remainder of fore and middle legs brownish red. Hind tibia brown except for yellowish brown ventral median stripe. FMS with petiole black, postpetiole dark brown-fuscous with extreme apex lighter. Basal 0.8 of T2, basal 0.6 and midline of T3, and midlines of T4-7, dark brown-fuscous; remainder of metasoma brownish red. *Length*: 6.9 mm (6.6 mm); wing 3.8 (3.8 mm); ovipositor 3.2 mm (3.1 mm).

**TYPE MATERIAL.** Female holotype [HMTc], *UNITED STATES—Texas*: Culbertson Co., McKittrick Canyon, 5200 ft., 15 Aug. 1961, F. & N. Gehlbach. Paratype [HMTc], same data as holotype, except collected 19 Aug. 1961.

**ETYMOLOGY.** From the Latin *capulus*, coffin, in reference to the shape of the areola, which resembles an old-fashioned coffin.

*Venturia chnaura*, new species  
(figs. 13k, 15b, 19a-b, 22k)

**DIAGNOSIS.** Distinguishable from other species in the Gelechia Group by the low pronotal rugae, yellow fore and middle coxae, light brownish red hind femur, elongate areola near the basal propodeal margin, and fuscous metasoma.

**FEMALE. Structure:** 1. Malar space about 0.3 as long as basal mandibular width. 2. Antenna with 31 flagellomeres. 3. Frontal and dorsal outlines of head as in fig. 19a-b; eyes ventrally convergent; OOD about 0.9. 4. Genal width about 0.3. 5. Mesosomal profile as in fig. 22k; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with epomia strong; lateral area with weak rugae on smooth surface; upper corner with scattered punctures on strongly granulate surface; collar smooth. 7. Mesopleurum with punctures in central region immediately below hypoepimeron about 0.1 OD, separated by 0.5-1.0 their diameter, on strongly granulate surface; mesopleural suture with transverse rugae absent

except near dorsal end; scrobal groove with strong rugae extending from subalar ridge half-way to scrobe; hypoepimeron with punctures absent on dorsal and posterior margins. 8. Propodeum with areola elongate, juncture of areola-petiole area moderately constricted (fig. 15b); areola with scattered punctures on granulate surface, petiole area with fine reticulate rugae; first and second lateral areas with scattered punctures on granulate surface; propodeal neck about 0.5 as long as wide. 9. Hind femur about 5.2 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.6 as long as cell. 11. FMS with petiole about 1.5 as long as postpetiole, postpetiole high (fig. 13k). 12. T2 about 1.9 as long as apical width; metasoma moderately compressed. 13. Ovipositor about 2.6 as long as hind femur, weakly curved. *Color*: Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, scape and pedicel ventrally, tegula, fore and middle coxae except for brown of extreme base, apical 0.2 of hind coxa, trochanters, and dorsal basal spot of hind tibia. Remainder of hind coxa dark brown-fuscous. Legs otherwise light brownish red, except for brown of sub-basal and apical parts of hind tibia, and apices of hind tarsomeres. FMS with petiole piceous; postpetiole deep reddish brown except for brownish red of apical 0.3. Apical 0.2 of T2, and scattered spots on lateral areas of T6-7, brownish red; metasoma otherwise dark brown. *Length*: 5.5 mm; wing 3.1 mm; ovipositor 3.4 mm.

**TYPE MATERIAL.** Female holotype [USNM], *UNITED STATES—Arkansas*: Washington Co., "ad. 7-25-42; reared from red bud leaf roller."

**ETYMOLOGY.** From the Greek *chnauros*, dainty, in reference to the overall appearance of the insect.

*Venturia compacta*, new species  
(figs. 13t, 18b, 20k-l, 24m)

**DIAGNOSIS.** This species can be distinguished from others in the Nigriscapus Group by the interception of the postnervulus at the midlength, nervulus opposite the basal vein, compact mesosoma (fig. 24m), predominately fuscous fore and middle coxae, punctate mesopleurum, moderately compressed metasoma, and straight ovipositor with the apex slightly upcurved.

**FEMALE. Structure:** 1. Malar space about 0.5 as long as basal mandibular width. 2. Antenna with 31-33 flagellomeres. 3. Frontal and dorsal



outlines of head as in fig. 20k-l; OOD about 0.9. 4. Genal width about 0.4. 5. Mesosomal profile as in fig. 24m; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with epomia strong; lateral area with strong rugae on smooth surface; upper corner rugosopunctate, punctures separated by about 0.3 their diameter, on smooth surface. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.2 OD, separated by 0.3-0.5 their diameter, on moderately granulate surface; scrobal groove with strong rugae extending from subalar ridge halfway to scrobe; hypopimeron with punctures on dorsal and posterior margins, those on posterior margin sparse. 8. Propodeum with areola elongate, juncture of areola-petiolar area moderately constricted (fig. 18b); propodeal carinae rather weak; areola with transverse rugae on smooth surface, petiolar area with most rugae transverse but some reticulate; first lateral area with regular punctation on smooth surface, second lateral area rugosopunctate on smooth surface; propodeal neck about 0.6 as long as wide. 9. Hind femur about 4.8 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.5 as long as cell. 11. FMS with petiole about 1.6 as long as postpetiole, postpetiole high (fig. 13t). 12. T2 about 2.4 as long as hind femur; metasoma moderately compressed. 13. Ovipositor 1.9-2.0 as long as hind femur, almost straight except for slight apical curve. *Color*: Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, ventral surfaces of scape and pedicel, tegula, apical 0.3 of fore and middle coxae, extreme apex of hind coxa, trochanters, remainder of fore leg and dorsal surface of middle tibia, and basal dorsal spot and median dorsal patch of hind tibia. Coxae fuscous except as noted. Remainder of middle leg light brownish red. Remainder of hind leg dark brown except femur with median deep brownish red area. FMS fuscous except for deep brownish red of apical 0.2 of postpetiole. Basal 0.8 of T2, basal 0.5 and midlines of T3, and central portions of midlines of T4-6, fuscous; remainder of metasoma deep brownish red. *Length*: 7.5-8.6 mm (8.6 mm); wing 4.1-4.7 mm (4.6 mm); ovipositor 2.7-2.9 mm (2.9 mm).

**TYPE MATERIAL.** Female holotype [HMTc], *UNITED STATES—Arizona*: Cochise Co., Portal, 17 Aug. 1974, H. & M. Townes. Paratypes, 2FF [HMTc], 1F [DBWC], same data as for holotype except collected 14 and 17 Aug. 1974.

**ETYMOLOGY.** From the Latin *compacta*, thick or firm, in reference to the stout appearance of the mesosoma.

***Venturia daschi*, new species**

(figs. 3b, 13y, 18a, 20o-p, 24h, 25h-i)

*Venturia* sp. C Finlayson, 1975. Mem. Entomol. Soc. Canada 94: 24.

**DIAGNOSIS.** Recognizable by the pronotal upper corner having the punctation concentrated along the margins on a granulate surface, fuscous 0.5 of fore and middle coxae, yellow hind trochanters, brownish red hind femur, elongate areola adjacent to the basal propodeal margin, granulate areola surface, elongate FMS with a low postpetiole, strongly compressed metasoma, and brownish red T4-7 except for the narrowly fuscous midlines.

**FEMALE. Structure:** 1. Malar space about 0.5 as long as basal mandibular width. 2. Antenna with 36-39 flagellomeres. 3. Frontal and dorsal outlines of head as in fig. 20o-p; OOD about 1.0. 4. Genal width about 0.4. 5. Mesosomal profile as in fig. 24h; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with epomia strong; lateral area with weak rugae on smooth surface; upper corner rugosopunctate on granulate surface, punctures separated by about 0.3 their diameter and concentrated along margins. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by 0.5-1.0 their diameter, on weakly-moderately granulate surface; scrobal groove with weak rugae extending from subalar ridge halfway to scrobe; hypopimeron with punctures sparse or absent on dorsal and posterior margins. 8. Propodeum with areola elongate, juncture of areola-petiolar area moderately constricted (fig. 18a); areola granulate with few transverse rugae, petiolar area basally reticulate, becoming transversely striate apically; first lateral area with regular shallow punctation on granulate surface, second lateral area rugosopunctate on granulate surface; propodeal neck about 0.6 as long as wide. 9. Hind femur about 5.3 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.5 as long as cell. 11. FMS with petiole about 1.8 as long as postpetiole (fig. 13y). 12. T2 about 2.6 as long as apical width; metasoma strongly compressed. 13. Ovipositor 3.0-3.3 as long as hind femur, straight to slightly curved. *Color*: Head and mesosoma black, the following pale yellow: mandible except for brown of base and apex, ventral sur-



faces of scape and pedicel, palpi, tegula, apical 0.5 of fore coxa, apical 0.3 of middle coxa, apical 0.1 of hind coxa, and trochanters. Coxae otherwise dark brown-fuscous. Remainder of fore and middle legs light brownish red. Hind leg with femur brownish red, base and apex brown; tibia except for narrow brownish yellow basal band, and tarsi, brown. FMS varying from deep brownish red to black. T2 except for apical 0.2, basal 0.3 and midline of T3, and midlines of remaining terga, fuscous; remainder of metasoma brownish red. *Length*: 7.8-9.9 mm (9.3 mm); wing 4.1-5.4 mm (5.2 mm); ovipositor 4.8-5.9 mm (5.5 mm).

**MALE.** *Structure*: Similar to female, except genal width 0.5; propodeum with central area slightly narrower, carinae stronger and higher; right gonoforceps and S9 as in figs. 25h-i. *Color*: As in female, except basal 0.9 of T2, basal 0.5 of T3, midline of T4, upper lateral 0.5 of T5-6, and T7, fuscous; remainder of metasoma brownish red. *Length*: 9.0 mm; wing 4.7 mm.

**TYPE MATERIAL.** Female holotype [CEDC], *UNITED STATES—Ohio*: Muskingum Co., Ohio, 30 Aug. 1964, "trap", C. Dasch. Paratypes, *CANADA—Ontario*: 1F [CNCI], Utopia, "no. 046-1346c; 12 Feb. 1947; F.I.S.; ex tortricid"; 1F [CNCI], Chalk River, "no. 044-1370b; 9 Mar. 1945; F.I. Survey; ex *Stenoma*"; *UNITED STATES—Kansas*: 2FF [USNM], Riley Co., 2 Aug. and May, F. Marlatt; *Maryland*: 1F [HMTC], Montgomery Co., Takoma Park, 7 June 1942, H. & M. Townes; *Ohio*: 1F [CEDC], 1F [DBWC], same data as for holotype except collected 28 Aug. 1964 and 17-19 June 1975, "trap", C. Dasch.

**OTHER SPECIMENS.** *UNITED STATES—Georgia*: 1M [CNCI], Forsyth Co., Forsyth, 18-23, May 1970, "Malaise trap", F. Naumann.

**COMMENT.** Those specimens with a deep brownish red FMS have the metasomal markings brown, not fuscous; tergal midline markings in this case are discontinuous. Several specimens have the dark markings of the hind femur expanded and fuscous; the hind tibia and tarsi are also fuscous.

**ETYMOLOGY.** This species is named after Clement E. Dasch, in recognition of his noteworthy contributions to ichneumonid taxonomy.

*Venturia dreisbachi*, new species  
(figs. 3f, 4a, 14d, 16h, 21m, 23b)

**DIAGNOSIS.** This species can be distinguished by the rugosopunctate pronotal upper corner, largely fuscous fore and middle coxae,

brown first hind trochanter, elongate areola near the basal propodeal margin, granulate areolar surface with weak transverse rugae, dark brown metasoma except for the brownish red lower lateral 0.5 of T4-7, and strongly curved ovipositor with 2 dorsal nodi just before the apical notch.

**FEMALE.** *Structure*: 1. Malar space about 0.5 as long as basal mandibular width. 2. Antenna with 28-32 flagellomeres. 3. Frontal outline of head similar to fig. 20o, dorsal outline as in fig. 21m; OOD about 0.9. 4. Genal width about 0.4. 5. Mesosomal profile as in fig. 23b; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with epomia strong; lateral area with weak rugae on granulate surface except where rugae absent adjacent to front edge; upper corner weakly rugosopunctate on granulate surface, punctures separated by 0.3-0.5 their diameter. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by 0.5-1.0 (occas. 0.3) their diameter, on moderately granulate surface; scrobal groove with strong rugae from subalar ridge halfway to scrobe; hypopimeron with punctures on dorsal and posterior margins, those on posterior margin sparser. 8. Propodeum with areola elongate, juncture of areola-petiolar area strongly constricted (fig. 16h); areola granulate with weak transverse rugae, petiolar area with transverse rugae on weakly granulate-smooth surface; first lateral area with scattered shallow punctures on granulate surface, second lateral area rugosopunctate on granulate surface; propodeal neck about 0.6 as long as wide. 9. Hind femur about 5.4 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.4 as long as cell. 11. FMS with petiole about 1.8 as long as postpetiole (fig. 14d). 12. T2 about 2.0 as long as apical width; metasoma moderately compressed. 13. Ovipositor 3.0-3.3 as long as hind femur, moderately curved; apex with two nodi before apical dorsal notch (fig. 4a). *Color*: Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, scape ventrally, tegula, apical 0.3 of fore coxa and extreme apex of middle coxa, trochanters except for brown first hind trochanter, and dorsal basal spot of hind tibia. Coxae otherwise dark brown-fuscous. Remainder of fore and middle legs light brownish red. Hind femur brownish red, except for dark brown of basal and apical 0.3 of anterior face; hind tibia and tarsi brown, tibia darker basally and apically. FMS black; T2, T3 except for apical corners, and midlines and upper lateral areas of T4-7, fuscous; metasoma

otherwise brownish red. *Length*: 6.4-7.3 mm (7.0 mm); wing 4.1-4.6 mm (4.6 mm); ovipositor 4.1-4.6 mm (4.4 mm).

**TYPE MATERIAL.** Female holotype [MSUC], *MEXICO*—*Mexico*: Teotihuacan, 21 July 1956, R. & K. Dreisbach. Paratypes, 3FF [MSUC], 1F [DBWC], same data as for holotype.

**ETYMOLOGY.** This species is named after the late R.R. Dreisbach, a professional chemist who was a student and collector of Hymenoptera.

*Venturia durangensis*, new species  
(figs. 4g, 14u, 18m, 21i-j, 25c)

**DIAGNOSIS.** Similar to other small species with roundish heads, parallel inner ventral margins of the compound eyes, and sparsely punctate pronotal upper corners; it can be recognized by the lack of rugae on the lateral area of the pronotum, yellow fore and middle coxae, fuscous first hind trochanter, elongate areola distant from the basal margin of the propodeum, generally weak propodeal carinae, fuscous metasoma except for the brownish red of the ventral 0.5 of T4-7, and enlarged ovipositor apex.

**FEMALE. Structure:** 1. Malar space about 0.3 as long as basal mandibular width. 2. Antenna with 34 flagellomeres. 3. Frontal and dorsal outlines of head as in fig. 21i-j; OOD about 1.0. 4. Genal width about 0.3. 5. Mesosomal profile as in fig. 25c; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with epomia strong; lateral area with rugae weak or absent, on strongly granulate surface; upper corner with few scattered punctures on strongly granulate surface. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by about their diameter, on strongly granulate surface; scrobal groove with rugae extending from subalar ridge to 0.7 of distance to scrobe; hypopimeron with punctures on dorsal and upper 0.5 of posterior margins. 8. Propodeum with areola elongate, juncture of areola-petiole area moderately constricted, carinae generally weak and especially so in vicinity of juncture of areola-petiole area (fig. 18m); areola strongly granulate, petiole area with transverse rugae; first lateral area with scattered shallow punctures on granulate surface, second lateral area regularly granuloso-punctate; propodeal neck about 0.8 as long as wide. 9. Hind femur about 5.2 as long as wide; hind basitarsus about 0.5 as long as hind tibial

spur. 10. Areolet petiolate, stalk about 0.5 as long as cell. 11. FMS with petiole about 1.7 as long as postpetiole, post-petiole depressed (fig. 14u). S1 without grooves. 12. T2 about 2.4 as long as hind femur; metasoma moderately compressed. 13. Ovipositor about 2.8 as long as hind femur, moderately curved and with apex enlarged (fig. 4g). *Color*: Head and metasoma black, the following whitish yellow: mandible except for dark brown of base and apex, ventral surfaces of scape and pedicel, palpi, tegula, fore and middle coxae except for brown of extreme bases, extreme apex of hind coxa, and fore and middle trochanters. Remainder of fore and middle legs light brownish red. Hind leg with coxa and first trochanter fuscous; second trochanter whitish yellow; remainder of leg deep brownish red. Metasoma fuscous except for brownish red of lower lateral 0.5 of T4-7. *Length*: 5.7 mm; wing 3.7 mm; ovipositor 2.9 mm.

**TYPE MATERIAL.** Female holotype [CNCI], *MEXICO*—*Durango*: 3 mi. E. El Salto, 8500 ft., 4 July 1964, W.R.M. Mason.

**ETYMOLOGY.** The specific name is derived from the state in which the type locality is situated.

*Venturia eremna*, new species  
(figs. 1a, 2b, 3g, 4e, 6, 13l, 15a, 19w-x, 22c, 29a-b)

**DIAGNOSIS.** This species can be distinguished from others with a completely fuscous-dark brown metasoma by the rather triangular outline of the head (fig. 19w), sparsely punctate pronotal upper corner, basally fuscous fore and middle coxae, somewhat elongate areola, two weak dorsolateral grooves of the petiole, and ovipositor with a weak dorsal nodus just before the apical notch.

**FEMALE. Structure:** 1. Malar space about 0.4 as long as basal mandibular width. 2. Antenna with 29-33 flagellomeres. 3. Frontal and dorsal outlines of head as in fig. 19w-x; OOD about 1.0. 4. Genal width about 0.4. 5. Mesosomal profile as in fig. 22c; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with epomia strong; lateral area with low to moderate rugae, on weakly granulate surface; upper corner with shallow punctures ranging from widely scattered to separated by about 0.3 their diameter, on strongly granulate surface. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by 0.5-1.0 their diameter, on moderately granulate surface; scrobal groove with strong rugae

from subalar ridge to scrobe; hypopimeron with fine punctures on dorsal and posterior margins. 8. Propodeum with areola somewhat elongate, juncture of areola-petiolar area moderately constricted (fig. 15a); areola with strongly granulate surface and occasionally with fine rugae, petiolar area with strong transverse rugae; first lateral area either with few shallow punctures or punctures absent, on granulate surface; second lateral area with regular shallow punctures on granulate surface; propodeal neck about 0.6 as wide as long. 9. Hind femur about 4.8 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.4 as long as cell. 11. FMS with petiole about 1.6 as long as postpetiole and with two faint dorsolateral grooves, postpetiole high (fig. 13l). 12. T2 about 1.8 as long as apical width; metasoma moderately compressed. 13. Ovipositor 2.6-3.0 as long as hind femur, strongly curved; apex with weak nodus just before dorsal notch (fig. 4e). *Color*: Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, scape and pedicel ventrally, tegula, apical 0.3 of fore and middle coxae, trochanters except for brown first hind trochanter, and dorsal basal spot of hind tibia. Remainder of fore and middle coxae varying from brownish yellow, to dark brown basally with rest brownish yellow. Fore and middle legs otherwise brownish red. Hind coxa fuscous. Hind femur and median 0.5 of tibia brownish red, basal and apical regions of tibia brown; hind tarsi brownish red. FMS black; remainder of metasoma dark brown-fuscous. *Length*: 4.8-7.8 mm (5.3 mm); wing 3.1-4.3 mm (3.4 mm); ovipositor 2.6-4.2 mm (3.1 mm).

**MALE.** *Structure*: Similar to female except antenna with 27-31 flagellomeres; genal width 0.5; mesopleurum often weakly granulate; scrobal groove with strong rugae from subalar ridge halfway to scrobe; propodeum with central area narrower and carinae higher and stronger; postpetiole depressed; right gonoforceps and S9 as in figs. 29a-b. *Color*: Similar to female except basal 0.5 of fore coxa, basal 0.7 of middle coxa, first hind trochanter, and hind femur and tibia, dark brown; second hind trochanter often yellowish brown; middle leg with apices of femur and tibia, occasionally brown. *Length*: 4.0-6.0 mm; wing 2.6-3.4 mm.

**TYPE MATERIAL.** Female holotype [HMTC], *UNITED STATES—North Carolina*: Macon Co., Highlands, 23 June 1977, H. & M. Townes. Paratypes, *CANADA—Ontario*: 1F [CNCI], St. Lawrence Isl. Nat. Park, "Grenadier 1. Centre", 11 Aug. 1975, "code

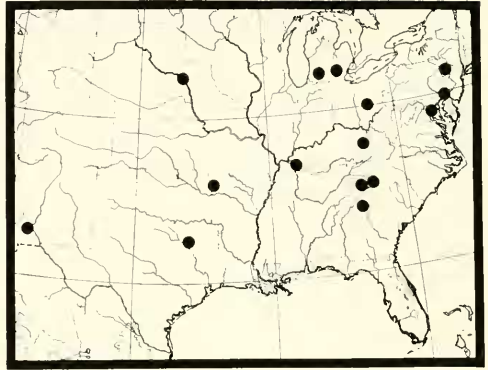


FIGURE 6. Localities for *Venturia eremna* Wahl.

2.225R", coll. by E. Sigler); *UNITED STATES—Arkansas*: 1F [HMTC], Crawford Co., Mountainsburg, 10-13 June 1971, P. Rush; *Delaware*: 1F [USNM], New Castle Co., Wilmington, 8 Aug. 1951, W.A. Connell; *Georgia*: 3MM [UGCA], 1M [DBWC], Clarke Co., Athens, 8-10 June 1969, 8-11 July 1969, 19-22 July 1969, 29-31 July 1969, "Malaise", R. & J. Matthews; *Iowa*: 1F [USNM], Woodbury Co., Sioux City, South Ravine, "swept mixt. veg.", C.N. Ainslie; *Kentucky*: 1F [MSUC], Floyd Co., Prestonburg, 20 June 1957, R.L. Fischer; 4FF [HMTC], 1F [DBWC], Trigg Co., Golden Pond, 26 May-10 June 1964 & 10 June-10 Aug. 1964, S.G. Breckland; 1F and 1M [HMTC], Trigg Co., Golden Pond, June 1965, "Malaise trap"; *Michigan*: 5FF and 2MM [MSUC], 2FF and 1M [DBWC], Kalamazoo Co., Gull Lake Biol. Station, 2 July 1963, 20 July 1964, 6 July 1965, 12 July 1965, 21 July 1965, 23 July 1965, 2 July 1967, 13 July 1969, 29 July 1969, R.L. Fischer; 1F [HMTC], Washtenaw Co., Ann Arbor, 14-16 July 1971, P. Rush; *New Jersey*: 1F [HMTC], Burlington Co., Moorestown, 2 Aug. 1939, H. & M. Townes; *North Carolina*: 8FF and 2MM [HMTC], 1F [DBWC], same data as holotype except collected 21 June 1977, 23 June 1977, 25 June 1977, and 26 June 1977; *Ohio*: 2FF and 6MM [CEDC], 2MM [DBWC], Muskingum Co., New Concord, 19 Aug. 1964, 22 Aug. 1964, 10 July 1966, 11 July 1966, 5-6 Aug. 1973, 4-9 Sept. 1973, "trap", C. Dasch; 1M [CEDC], Muskingum Co., Otsego, McAllister Biol. Station, 13-18 July 1976, C. Dasch; *Pennsylvania*: 1F [USNM], Monroe Co., Swiftwater, 2 July 1939, T.R. Gardner; *South Carolina*: 4FF [HMTC], 1F [DBWC], Greenville Co., Cleveland, 25 June 1961, 29 June 1961, 11 July 1961, 15 June 1976, G.F. Townes; *Virginia*: 1F [HMTC], Arlington Co., Arlington, 1 Aug. 1950, K.V. Krombein.



OTHER SPECIMENS. *UNITED STATES*—*New Mexico*: 1F [MSUC], Grant Co., 14 mi. N. Silver City, 7 July 1961, G.C. Eickwort; *Texas*: 1F [USNM], Dallas Co., Dallas, 18 May 1907, F.C. Bishop.

COMMENT. Males are occasionally found with the apical 0.1 of T2 brownish red. Females sometimes have the brown of the hind tibia faint. Fig. 6 shows the distribution of this species.

ETYMOLOGY. From the Greek *eremnos*, black or swarthy, in reference to the general color of the insect.

***Venturia erythrogaster*, new species**

(figs. 3i, 13r, 16c, 21v, 28a-b)

DIAGNOSIS. This species can be distinguished from others in the Hadra Group by the yellow first hind trochanter, somewhat elongate areola with the surface smooth and with weak transverse rugae, weakly granulate mesopleurum, brownish red metasoma with the fuscous markings confined to the petiole, and length (10.2-10.4 mm).

FEMALE. *Structure*. 1. Malar space about 0.3 as long as basal mandibular width. 2. Antenna with 44 flagellomeres. 3. Frontal outline of head similar to fig. 20o, dorsal outline as in fig. 21v; OOD about 0.5. 4. Genal width about 0.4. 5. Mesosomal profile similar to fig. 23g; mesonotal profile strongly produced; subalar ridge punctate. 6. Pronotum with strong epomia; lower part of collar distinctly punctate, not weakly rugosopunctate; lateral area with strong rugae except where obsolescent adjacent to front edge, on smooth surface; upper corner rugosopunctate, punctures separated by about 0.3 their diameter or occasionally subconfluent. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by 0.3-0.5 their diameter on smooth surface; scrobal groove with strong rugae from subalar ridge to scrobe, or with rugae occasionally obsolescent adjacent to scrobe; hypopimeron with close punctures on dorsal and posterior margins. 8. Propodeum with areola somewhat elongate and narrowed basally, juncture of areola-petiolar area weakly constricted (fig. 16c); areola with transverse rugae on smooth surface, petiolar area reticulate; first lateral area with dense punctation on smooth surface, second lateral area rugosopunctate on smooth surface; propodeal neck about 0.4 as long as wide. 9. Hind femur about 5.3 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.4 as long as cell. 11. FMS with petiole about 1.5

as long as postpetiole, postpetiole depressed (fig. 13r). 12. T2 about 1.4 as long as apical width; metasoma weakly compressed. 13. Ovipositor about 2.4 as long as hind femur, weakly curved; apex laterally flattened and minutely longitudinally aciculate. *Color*: Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, ventral surfaces of scape and pedicel, tegula, apical 0.6 of fore coxa and apical 0.5 of middle coxa, fore and middle trochanters, and dorsal edge of fore tibia. Coxae fuscous except as noted otherwise. Remainder of fore and middle legs light brownish red. Remainder of hind leg brownish red. Basal 0.7 of petiole and ventral margin of postpetiole, extreme base of T2, fuscous; remainder of metasoma brownish red. *Length*: 11.4 mm (10.8 mm); wing 6.4 mm (6.4 mm); ovipositor 5.7 mm (5.7 mm).

MALE. *Structure*: Similar to female except genal width 0.5; antennae incomplete; propodeum with carinae stronger and higher; right gonoforceps and S9 as in figs. 28a-b. *Color*: Similar to female, except that first hind trochanter brown; basal 0.2 and apical 0.3 of T3, and basal median area of T4-7, fuscous; gonoforceps brown. *Length*: 10.2-10.4 mm; wing 6.0-6.4 mm.

TYPE MATERIAL. Female holotype [HMTc], *UNITED STATES*—*New York*: Suffolk Co., Babylon, 2 July 1937, F.S. Blanton. Paratypes, *UNITED STATES*—*Florida*: 1F [FSCA], Alachua Co., Gainesville, Pierce's Homestead, 21 May 1976, "Malaise trap," W.H. Pierce; *Michigan*: 1M [MSUC], Muskegon Co., 5 July 1958, R. & K. Dreisbach; 1M [MSUC], Oceana Co., 4 July 1940, R.R. Dreisbach; *Texas*: 1F [TAMU], Anderson Co., Salmon, 1-15 May 1974, H.R. Burke.

COMMENT: The FMS can have fuscous coloration extending to the basal 0.5 of the postpetiole.

ETYMOLOGY. From the Greek *erythros*, red, and *gaster*, belly, in reference to the almost completely brownish red metasoma. It is a noun in apposition.

***Venturia erythropus* (Ashmead)**

(figs. 1b, 14n, 17f, 20i-j, 24g, 29e-f)

*Limneria erythropus* Ashmead, 1890 (1889). Proc. United States Nat. Mus. 12: 431. Male (USNM).

*Limnerium erythropum* Dalla Torre, 1901. Cat. Hymen., vol. 3, p. 95.

DIAGNOSIS. Distinguished from other species by the pronotal upper corner having shal-



low regular punctures on a strongly granulate surface, yellow fore and middle coxae, brown hind trochanters, light brownish red hind femur, elongate areola with a granulate surface, brownish red T4-7 except for the narrowly fuscous midlines, and long (2.7-3.1 as long as hind femur) ovipositor.

**FEMALE. Structure:** 1. Malar space about 0.4 as long as basal mandibular width. 2. Antenna with 35-40 flagellomeres. 3. Frontal outline of head as in fig. 20i-j; OOD about 0.5. 4. Genal width about 0.4. 5. Mesosomal profile as in fig. 24g; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with weak epomia; lateral area weakly granulate with weak rugae; upper lateral corner with shallow regular punctures on strongly granulate surface, punctures separated by about 0.3 their diameter. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by 0.3-1.0 their diameter, on granulate surface; scrobal groove with strong rugae extending from subalar ridge to scrobe; hypopimeron with few punctures on dorsal and posterior margins. 8. Propodeal area with areola elongate and basally rounded, weakly constricted at areola-petiolar juncture (fig. 17f); areola with weak transverse rugae on granulate surface, petiolar area striate-reticulate; first lateral area with shallow punctures on granulate surface, second lateral area weakly rugosopunctate on granulate surface; propodeal neck about 0.5 as long as wide. 9. Hind femur about 5.7 as long as wide; hind tibial spur about 0.5 as hind basitarsus. 10. Areolet petiolate, stalk 0.5 as long as cell. 11. FMS with petiole about 1.6 as cell as postpetiole, postpetiole high (fig. 14n). 12. T2 about 2.0 as long as apical width; metasoma moderately compressed. 13. Ovipositor 2.7-3.2 as long as hind femur, moderately curved. **Color:** Head and mesosoma black, the following whitish yellow: mandible except for dark brown of base and apex, palpi, tegula, ventral surfaces of scape and pedicel, fore and middle coxae except for dark brown of extreme bases, and fore and middle trochanters. Hind coxa dark brown. Remainder of legs brownish-red, hind legs somewhat darker. Metasoma with FMS black; T2, T3 except for apicolateral corners, and midlines and upper portions of lateral areas of remaining terga, fuscous; remainder of metasoma brownish red. **Length:** 7.0-11.1 mm; wing 3.7-6.2 mm; ovipositor 3.6-6.2 mm.

**MALE. Structure:** Similar to female, except antenna with 38 flagellomeres (only one specimen with complete flagellum; genal width 0.5; propodeum with central area slightly narrower,

carinae stronger and higher; right gonoforceps and S9 as in figs. 29e-f. **Color:** As in female, except brownish red of hind femur, tibia, and tarsi same as fore and middle legs; metasoma with T4-8 dark brown, except for brownish red of basilateral corners of T4, gonoforceps, and apices of T5-8. **Length:** of eleven males, only four had metasoma present, 6.1-8.8 mm (8.2 mm); wing 3.6-4.9 mm (4.7 mm).

**SPECIMENS EXAMINED.** Male holotype [USNM, type no. 2070], *UNITED STATES—Texas*: no other data, G.W. Belfrage, collector. Other specimens, *MEXICO—Hidalgo*: 1F [CNCI], Pachuca, 29 July 1954, 1700 ft., J.G. Chillcott; 1M [SEMC], 3 mi. W. Pachuca, 24 June 1954, "taken on pepper tree", University of Kansas Mexican Expedition; 1F [SEMC], 4 mi. E. Tulancingo, 24 Aug. 1962, 7100', E. Ordway and R. Roberts; *UNITED STATES—Florida*: 1F HMTc, Levy Co., Yankeetown, 12 Dec. 1949, H.K. Townes; 1F [MCZC], Putnam Co., Georgetown, April 1947, C.T. Brues; 1F [CNCI], Seminole Co., Longwood, 1-8 March 1975, W.R.M. Mason; *Missouri*: 4FF [CNCI], Wayne Co., Williamsville, May 1969 and 12-26 May 1969, "Malaise trap", J.T. Becker; *Texas*: 28FF and 10MM [USNM], same data as for holotype; 2FF [CNCI], Kerr Co., 30 March 1959, W.R.M. Mason.

**COMMENT.** The extent of the fuscous coloration on T4-8 is variable, rarely almost completely absent.

G.W. Belfrage who collected the holotype lived in Texas from 1867 to 1882.

*Venturia finlaysonae*, new species  
(figs. 13s, 16a, 21z, 24j, 26a-b)

*Venturia* sp. B, Finlayson, 1975. Mem. Entomol. Soc. Canada 94: 23.

**DIAGNOSIS.** This species can be distinguished from others in the Hadra Group by the mesopleurum having the punctures separated by about their diameter, somewhat elongate areola with the surface granulate, dark brown hind leg, and fuscous metasoma.

**FEMALE. Structure:** 1. Malar space about 0.3 as long as basal mandibular width. 2. Antenna with 35-40 flagellomeres. 3. Frontal outline of head similar to fig. 20o, dorsal outline as in fig. 21z; OOD about 0.7. 4. Genal width about 0.4. 5. Mesosomal profile as in fig. 24j; mesonotal profile strongly produced; subalar ridge punctate to weakly rugosopunctate. 6. Pronotum with strong epomia; lateral area with moderate rugae, usually weak or absent centrally, on smooth surface; upper corner punctate, punc-

tures separated by about 0.3 their diameter, on smooth surface. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by about their diameter, on weakly granulate surface; scrobal groove with weak rugae extending from subalar ridge to scrobe; hypopimeron with punctures on dorsal and upper 0.5 of posterior margins. 8. Propodeum with areola somewhat elongate, juncture of areola-petiole area weakly to moderately constricted (fig. 16a); areola with some rugae on granulate surface, petiole area with basal area reticulate, becoming apically transversely striate; first lateral area with scattered punctures on granulate surface, second lateral area regularly punctate on granulate surface; propodeal neck about 0.4 as long as wide. 9. Hind femur about 5.0 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.3 as long as cell. 11. FMS with petiole about 1.7 as long as postpetiole, postpetiole depressed (fig. 13s). 12. T2 about 1.5 as long as apical width; metasoma weakly compressed. 13. Ovipositor 2.9-3.2 as long as hind femur, almost straight. *Color*: Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, ventral surfaces of scape and pedicel, palpi, apical 0.4 of fore coxa, extreme apex of middle coxa, fore and middle trochanters, and dorsal surface of fore tibia. Remainder of fore and middle legs brownish red. Hind leg with coxa fuscous; remainder of leg, except for brownish yellow second hind trochanter and dorsal basal spot on tibia, dark brown. FMS black; remainder of metasoma dark brown-fuscous, except narrow brownish red bands along apices of T3-8. *Length*: 7.2-9.4 mm (9.1 mm); wing 4.8-6.0 mm (6.0 mm); ovipositor 4.1-6.0 mm (5.7 mm).

**MALE.** *Structure*: Similar to female, except antenna with 37-38 flagellomeres; pronotum with rugae of lateral area weak; scrobal groove extending halfway to scrobe; postpetiole often high; T2 about 2.5 as long as apical width; propodeal carinae higher and stronger; right gonoforceps and S9 as in figs. 26a-b. *Color*: Similar to female, except median 0.5 of hind femur brownish red; T2-8 dark brown-fuscous, the following areas brownish red: extreme apex of T2, T4 except for lateral apical spots, approximately median bands of T5-6, apices of T7-8, and gonoforceps. *Length*: 8.0-9.0 mm; wing 5.0-5.2 mm.

**TYPE MATERIAL.** Female holotype [CNCI], CANADA—Ontario: Cedar Lake Field Station, "1TA-54-1; F.I.S.; ex *Tetralopha asperatella*", emerged 5 July 1962. Paratypes,

CANADA—Manitoba: 1M [CNCI], White-mouth, "emer. 22 Sept. 1954; F.I.S.; W54-2724; ex *Tetralopha asperatella*"; Ontario: 1F [CNCI], Ardbeg, "no. 49-6723; 4 Oct. 1949; F.I.S.; lot 50-250"; 5FF and 3MM [CNCI], 1F and 3MM [DBWC], same data as holotype except emerged 1961—T-49-33, 1961—T-49-56, 1961—T-49-64, 1961—T-49-197, 2 July 1962—VTA-7-1, 5 July 1962—IITA-62-2, 6 July 1962—TT-1-1-1, 6 July 1962—VTA-65-3, 30 May 1963—1-TA-1-1, 30 May 1963—1-TA-30A-1, 30 May 1963—2-TA-13-2, 30 May 1963—TT-11-2; 1F [DBWC], Durham "emer. 9 March 1964; F.I.S.; A63-5701-01-5; ex *Tetralopha asperatella*"; 1F [CNCI], 1F [DBWC], St. Lawrence Isl. Nat. Park, "Grenadier I. Centre", 8 Aug. 1975 and 11 Aug. 1975, "Malaise trap; code 2-174R" and "code 2-225R", E. Sigler; 1M [CNCI], Vivian, "emer. 14 Sept. 1962; F.I.S.; S62-4515-01-01; ex *Tetralopha asperatella*"; 1F [CNCI], Wyevale, "no. 050-1471; 25 Feb. 1951; F.I.S.; ex *Tetralopha asperatella*"; UNITED STATES—Massachusetts: 1F [USNM], Essex Co., Wakefield, 25 Aug. 1982, "GipMothLab 12164T325; ex *Tetralopha asperatella*"; New York: 1F [HMTC], Dutchess Co., Poughkeepsie, 2 Aug. 1936, H.K. Townes.

**COMMENT.** One female (Ardbeg, Ontario) has the dark brown coloration of the metasoma much reduced, present only on the basal 0.5 of T2, and on irregular bands along the apices of T2-8. The remainder of T2-8 is brownish red. In addition, the hind femur is centrally deep brownish red.

**ETYMOLOGY.** This species is named after Thelma Finlayson, in recognition of her studies of larval ichneumonids, especially those of Porizontinae.

*Venturia floridensis*, new species

(figs. 14s, 18k, 21e-f, 25b, 28c-d)

**DIAGNOSIS.** This species may be distinguished by the predominately fuscous fore and middle coxae, elongate and narrow areola (fig. 18k), shape of the FMS, long T2, strongly compressed and predominately brownish red metasoma, and straight ovipositor that is about 2.5 as long as the hind femur.

**FEMALE.** *Structure*: 1. Malar space about 0.3 as long as basal mandibular width. 2. Antenna with 37-38 flagellomeres. 3. Frontal and dorsal outlines of head as in figs. 21e-f; OOD about 0.6. 4. Genal width about 0.3. 5. Mesosomal profile as in fig. 25b; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with epomia strong; lateral

area with strong rugae on smooth surface; upper corner rugosopunctate, punctures separated by about 0.3 their diameter on smooth surface. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by 0.3-1.0 their diameter, on moderately granulate surface; scrobal groove with strong rugae extending from subalar ridge to scrobe, and covering considerable area of hypopimeron; hypopimeron with close punctures on dorsal and posterior margins. 8. Propodeum with areola elongate, juncture of areola-petiolar area weakly constricted (fig. 18k); areola with weak rugae on granulate surface, petiolar area basally reticulate becoming apically transversely striate; first lateral area with regular punctation on weakly granulate surface, second lateral area rugosopunctate on smooth surface; propodeal neck about 0.7 as long as wide. 9. Hind femur about 5.7 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.3 as long as cell. 11. FMS with petiole about 1.5 as long as postpetiole, postpetiole depressed (fig. 14s). 12. T2 about 2.8 as long as apical width; metasoma strongly compressed. 13. Ovipositor about 2.4 as long as hind femur, straight. *Color*: Head and mesosoma black, the following whitish yellow: mandible except for dark brown of base and apex, ventral surfaces of scape and pedicel, palpi, tegula, apical 0.5 of fore coxae and apical 0.3 of middle coxa, trochanters, dorsal surface of fore tibia, and dorsal basal spot on hind tibia. Hind coxa and remainder of fore and middle coxa fuscous. Remainder of fore and middle legs light brownish red. Remainder of hind leg with femur brownish red, and tibia and tarsus brown. FMS fuscous except for brownish red of extreme apex of postpetiole. Basal 0.8 of T2 fuscous; remainder of metasoma brownish red. *Length*: 9.1-9.5 mm (9.1 mm); wing 4.9 mm (4.9 mm); ovipositor 4.4 mm (4.4 mm).

**MALE.** *Structure*: Similar to female except antenna with 37-38 flagellomeres; propodeum with central area narrower and carinae higher and stronger; right gonoforceps and S9 as in figs. 28c-d. *Color*: Similar to female except basal 0.9 of T2, T3, midlines of T4-5, and T6-7 except for narrow apical band, fuscous; remainder of metasoma brownish red. *Length*: 8.4-8.8 mm; wing 4.6-4.7 mm.

**TYPE MATERIAL.** Female holotype [FSCA], UNITED STATES—Florida: Putnam Co., 2 mi. NW Orange Spg., 13 Oct.-5 Nov. 1955, "Malaise trap", J. Wiley. Paratypes, UNITED STATES—Florida: 1F [DBWC], Highlands Co., Archbold Biol. Sta., 14 May

1978, "insect flight trap", L.L. Lampert, Jr. and H.V. Weems, Jr.; 1M [DBWC], same data as preceding except collected 31 May 1978, H.V. Weems, Jr. and L.K. Klein; 1M [FSCA], Levy Co., Shell Mound, 3 July 1976, "netted", G.B. Fairchild; 1F [FSCA], Marion Co., 9 mi. SSW Ocala, 19 Sept.-8 Oct. 1975, "Malaise trap in turkey oak", J. Wiley.

**ETYMOLOGY.** The specific name derives from the state of Florida, where the species was collected.

*Venturia fuscifemorata*, new species  
(figs. 13z, 17l, 20s-t, 24e, 25d-e)

**DIAGNOSIS.** Recognizable by the pronotal upper corner having a weakly granulate surface with the punctation concentrated along the margins, fuscous fore and middle coxae, dark brown first hind trochanter, dark brown middle and hind femora, elongate and narrow areola adjacent to the basal propodeal margin, granulate areolar surface with scattered punctures, high postpetiole, and brownish red T4-7 except for the narrow fuscous midlines.

**FEMALE.** *Structure*: 1. Malar space about 0.4 as long as basal mandibular width. 2. Antenna with 42-43 flagellomeres. 3. Frontal and dorsal outlines of head as in fig. 20s-t; OOD about 0.8. 4. Genal width about 0.4. 5. Mesosomal profile as in fig. 24e; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with epomia strong; lateral area with strong rugae on smooth surface; upper corner with punctures concentrated along margins, punctures separated by about 0.3 their diameter, on weakly granulate surface. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by 0.5-1.0 (occas. 0.3) their diameter, on weakly-moderately granulate surface; scrobal groove with weak rugae extending from subalar ridge halfway to scrobe; hypopimeron with punctures sparse or absent along dorsal and posterior margin. 8. Propodeum with areola elongate, juncture of areola-petiolar area weakly constricted (fig. 17l); areola with fine rugae and punctures on weakly granulate surface, petiolar area with strong transverse rugae; first lateral area with punctures mainly along lateral margins, on granulate surface; second lateral area with regular shallow punctation on granulate surface; propodeal neck about 0.6 as long as wide. 9. Hind femur about 5.4 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.2 as long as cell. 11. FMS with petiole about 1.6 as long as postpetiole (fig. 13z); S1



with weak groove running down midline of central 0.5. 12. T2 about 2.6 as long as apical width; metasoma moderately compressed. 13. Ovipositor 3.0-3.2 as long as hind femur, almost straight. *Color*: Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, ventral surface of scape, tegula, apical 0.2 of fore coxa, extreme apex of middle coxa, fore and middle trochanters, second hind trochanter, and apical 0.1 of middle femur. Fore and middle coxae otherwise dark brown. Basal 0.9 of middle femur, hind first trochanter, and remainder of hind leg, dark brown. FMS black except for brownish red apex of postpetiole. Basal 0.8 of T2, basal 0.3 of T3, and midline areas of T4-7, fuscous; remainder of metasoma brownish red. *Length*: 11.2 mm (11.1 mm); wing 5.9 mm (6.2 mm); ovipositor 5.7 mm (5.9 mm).

**MALE.** *Structure*: Similar to female except genal width 0.5; postpetiole depressed; propodeal carinae stronger and higher; right gonoforceps and S9 as in figs. 25d-e. *Color*: Similar to female except for fuscous coloration of T3, midlines of T4-6, and T7-8; one specimen with T3 having pair of lateral brownish red spots. *Length*: 9.8-9.9 mm; wing 5.3-5.5 mm.

**TYPE MATERIAL.** Female holotype [HMTc], UNITED STATES—New York: Tompkins Co., Ithaca, 6 Mile Creek, 26 July 1939, P. P. Babiý. Paratypes, UNITED STATES—Connecticut-Rhode Island: 1F [CUIC], Killingly Pond, South Shore, collected by Klots; Massachusetts: 1M [HMTc], Dukes Co., Martha's Vineyard, 14 Aug., F.M. Jones; Pennsylvania: 1M [USNM], Philadelphia, 28 June 1962.

**ETYMOLOGY.** From the Latin *fuscus*, dark or swarthy, and *femur*, in reference to the dark middle and hind femora.

### *Venturia gaesata*, new species

(figs. 3h, 4d, 13c, 15c, 19k-l, 22h)

**DIAGNOSIS.** This species can be distinguished by the upper pronotal corner having dense punctures on a strongly granulate surface (appearing shagreened), predominately yellow fore and middle coxae, brownish red hind femur, fuscous first hind trochanter and metasoma, short areola, weakly compressed metasoma, and laterally compressed ovipositor.

**FEMALE.** *Structure*: 1. Malar space about 0.4 as long as basal mandibular width. 2. Antenna with 30-33 flagellomeres. 3. Frontal and dorsal outlines of head as in fig. 19k-l; OOD about 0.8. 4. Genal width about 0.3. 5. Mesosomal profile as in fig. 22h; mesonotal profile strongly

produced; subalar ridge weakly rugosopunctate. 6. Pronotum with epomia strong; lateral area with weak rugae on weakly granulate surface; upper corner with indistinct punctures separated by 0.3-0.5 their diameter, on strongly granulate surface. 7. Mesopleurum with punctures in central region immediately below hypopleuron about 0.1 OD, separated by 0.5-1.0 their diameter, on strongly granulate surface; scrobal groove with strong rugae extending from subalar ridge halfway to scrobe; hypopleuron with punctures on dorsal and posterior margins absent. 8. Propodeum with areola as long as wide, juncture of areola-petiole area moderately constricted (fig. 15c); areola strongly granulate, petiole area with fine transverse rugae; first lateral area with indistinct punctures on granulate surface, second lateral area rugosopunctate on weakly granulate surface; propodeal neck about 0.4 as long as wide. 9. Hind femur about 4.2 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.6 as long as cell. 11. FMS with petiole about 1.7 as long as postpetiole, postpetiole high (fig. 13c). 12. T2 about 1.5 as long as apical width; metasoma weakly compressed. 13. Ovipositor 2.6-2.9 as long as hind femur, strongly curved and laterally flattened; apex elongate (fig. 4d). *Color*: Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, scape and pedicel ventrally, tegula, fore coxa except for extreme base and basal 0.3 of middle coxa, extreme apex of hind coxa, and fore and middle trochanters. Fore and middle coxae otherwise dark brown. Fore and middle legs otherwise light brownish red. Hind leg with coxa and first trochanter, fuscous; second trochanter, femur except for basal and apical 0.2, median 0.5 of tibia, brownish red; ventral surfaces of tarsomeres brownish yellow; leg otherwise dark brown. FMS black; remainder of metasoma, except for brownish red of extreme apices and ventral 0.2 of lateral areas of T4-7, fuscous. *Length*: 5.5-6.8 mm (6.8 mm); wing 3.5-4.0 mm (4.0 mm); ovipositor 3.2-4.0 mm (4.0 mm).

**TYPE MATERIAL.** Female holotype [HMTc], UNITED STATES—Oregon: Benton Co., Corvallis, 27 July 1978, H. & M. Townes. Paratypes, UNITED STATES—Arkansas: 1M [HMTc], Crawford Co., Mountsburg, 10-13 June 1971, P. Rush; Florida: 1F [HMTc], Alachua Co., Gainesville, 14 July 1981, H. & M. Townes; Georgia: 1F [CNCI], Forsyth Co., Forsyth, Aug. 1970, "Malaise trap", F.T. Naumann; Louisiana: 1F [HMTc], Rapides Parish, 8-11 May 1973, P. Rush; Mis-



*souri*: 1F [CNCI], Wayne Co., Williamsville, Oct.-Nov. 1968, "Malaise trap", J.T. Becker; *New Jersey*: 1F [DBWC], Burlington Co., Moorestown, 27 June 1939, H. & M. Townes; *North Carolina*: 1F [HMTc], Wake Co., 1 July 1951, H. & M. Townes; *Oregon*: 1F [HMTc], 2FF [DBWC], same data as for holotype except collected 29 July 1978 and 31 July 1978; *South Carolina*: 1F [HMTc], Greenville Co., Cleveland, 2 July 1961, G.F. Townes.

COMMENT. The dark brown coloration of the hind femur is sometimes absent with the entire femur deep brownish red. The second hind trochanter can be brownish yellow, and the brownish red areas of the metasoma can be absent.

ETYMOLOGY. From the Latin *gaesum*, a long and heavy javelin of the Gauls, in reference to the long and laterally compressed ovipositor.

***Venturia gelechia* (Ashmead)**

(figs. 14q, 15e, 19aa-bb, 22m)

*Limneria gelechia* Ashmead, 1890 (1889). Proc.

United States Nat. Mus. 12: 432. Female (USNM).

DIAGNOSIS. This species can be distinguished from others in the *Gelechia* Group by the predominately dark brown fore and middle coxae, light brownish red hind leg, areola about as long as wide, presence of an areolet, and fuscous metasoma.

FEMALE. *Structure*: 1. Malar space about 0.3 as long as basal mandibular width. 2. Antenna with 31-33 flagellomeres. 3. Frontal and dorsal outlines of head as in fig. 19aa-bb; eyes ventrally convergent; OOD about 0.9. 4. Genal width about 0.4. 5. Mesosomal profile as in fig. 22m; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with epomia strong; lateral area with strong rugae on weakly granulate surface; upper corner with scattered punctures on strongly granulate surface. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by 0.5-1.0 their diameter, on moderately-weakly granulate surface; scrobal groove with strong rugae from subalar ridge halfway to scrobe; hypopimeron with sparse punctures on dorsal and posterior margins. 8. Propodeum with areola about as long as wide, juncture of areola-petiolear region weakly constricted (fig. 15e); areola with few weak rugae on strongly granulate surface, petiolear area with fine transverse rugae; first lateral area with regular punctation on granulate

surface, second lateral area rugosopunctate on granulate surface; propodeal neck about 0.5 as long as wide. 9. Hind femur about 4.9 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.5 as long as cell. 11. FMS with petiole about 1.6 as long as postpetiole, postpetiole high (fig. 14q). 12. T2 about 2.0 as long as apical width; metasoma moderately compressed. 13. Ovipositor 2.8-3.1 as long as hind femur, weakly curved. *Color*: Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, tegula, apical 0.5 of fore coxa and apical 0.3 of middle coxa, extreme apex of hind coxa, trochanters except for brown first hind trochanter, dorsal surface of fore tibia, and dorsal basal spot of hind tibia. Fore and middle coxae otherwise dark brown-fuscous. Remainder of fore and middle legs light brownish red. Hind femur except for brown of apical 0.2, and median 0.5 of hind tibia, brownish red; hind tarsi and remainder of hind tibia brown. Metasoma dark brown-fuscous except for brownish red of apical 0.2 of T2. *Length*: 5.4-7.1 mm (7.1 mm); wing 3.4-4.1 mm (4.1 mm); ovipositor 3.2-4.1 mm (4.1 mm).

MALE. *Structure*: Similar to female except antenna with 30-34 flagellomeres; eyes not ventrally convergent; genal width 0.5; propodeum with central area narrower and carinae stronger and higher; postpetiole depressed. *Color*: Similar to female except hind femur, tibia, and tarsi uniformly light to dark brown, except for yellowish white dorsal basal spot of hind tibia; gonoforceps dark brown-fuscous. *Length*: 6.8 mm (5.3 mm); wing 3.9 mm (3.2 mm).

SPECIMENS EXAMINED. Female holotype [USNM], type no. 2074, *UNITED STATES—Missouri*: St. Louis Co., Kirkwood, 15 May 1885, M. Murtfeldt, "par. on *Gelechia celtisella* 8/19/84". Allotype [USNM], type no. 2074, same data as for holotype. Other specimens, *UNITED STATES—Kansas*: 1F [DBWC], Douglas Co., Breidenthal Reserve, 2 mi. N. Baldwin, 11-16 Sept. 1982, D.B. Wahl; 2FF [DBWC], Douglas Co., Lawrence, 11-19 June 1982 and 19-30 June 1982, "Malaise trap", D.B. Wahl; 3FF [USNM], Riley Co., Manhattan, 1935 and 25 July 1937, 1935 specimens from *Gelechia cercerisella* Chamb., R.L. Parker; *Louisiana*: 1F [CNCI], Evangeline Parish, Bayou Chicot, 15 May-11 June 1971, D. Shanek; *Maryland*: 1F [USNM], Montgomery Co., Glen Echo, 21 Aug. 1923, J.R. Malloch; 1F [USNM], Montgomery Co., Plimmers Island, 8 Sept. 1963, K.V. Krombein; *Missouri*: 2FF CNCI, Wiley Co., Williamsville, 16-26

June 1969, "Malaise trap", J.T. Becker; 1F [USNM], Boone Co., Columbia, 20 June 1967, "Malaise trap; 7am-4pm", F.D. Parker; *North Carolina*: 1F [CEDC], Yancey Co., Mt. Mitchell, 17 Aug. 1970, 5500', "trap", C. Dasch; *Virginia*: 1F [MCZC], Fairfax Co., Great Falls, A.L. Melander; 1F [USNM], Fairfax Co., Great Falls, "reared 13 June '04; C. Heinrich; *Gelechia cercerisella* on *Cerceris*; 11187b Hopk.U.S."

COMMENT. Females occasionally have brownish red highlights on the lateral areas and apices of T3-7. The usual basal dark brown of the fore and middle coxae is sometimes lighter, merging gradually into the yellow apical areas.

*Venturia hadra*, new species  
(figs. 13o, 16b, 21x, 23d, 26c-d)

DIAGNOSIS. This species can be distinguished from others in the *Hadra* Group by the weakly to moderately granulate mesopleurum, elongate areola with the surface granulate, and by the brownish red metasoma with fuscous markings on T2 and the basal 0.3 of T3.

FEMALE. *Structure*: 1. Malar space about 0.4 as long as basal mandibular width. 2. Antenna with 38-41 flagellomeres. 3. Frontal outline of head similar to fig. 20o, dorsal outline as in fig. 21x; OOD about 0.8. 4. Genal width about 0.4. 5. Mesosomal profile as in fig. 23d; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with strong epomia; lateral area with strong rugae on weakly granulate surface; upper corner rugosopunctate, punctures separated by about 0.3 their diameter. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by about their diameter, on weakly-moderately granulate surface; scrobal groove with strong rugae extending from subalar ridge halfway to scrobe; hypopimeron with punctures on dorsal and upper 0.5 of posterior margins. 8. Propodeum with areola elongate, juncture of areola-petiolar area moderately constricted (fig. 16b); areola granulate with scattered punctures, petiolar area with strong transverse rugae; first lateral area with scattered punctures on granulate surface, second lateral area with close punctures on granulate surface; propodeal neck about 0.4 as long as wide. 9. Hind femur about 5.0 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.5 as long as cell. 11. FMS with petiole about 1.5 as long as postpetiole, postpetiole depressed (fig. 13o). 12. T2 about 1.4 as long as apical width; metasoma weakly compressed. 13. Ovipositor

2.7-3.0 as long as hind femur, almost straight. *Color*: Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, ventral surfaces of scape and pedicel, tegula, apical 0.4 of fore coxa and apical 0.2 of middle coxa, trochanters except for dark brown first hind trochanter, dorsal edge of fore tibia, and dorsal basal spot on hind tibia. Coxae, except where noted otherwise, fuscous; remainder of fore and middle legs light brownish red. Remainder of hind leg dark brown except for median brownish red of femur. FMS fuscous (except, occasionally, extreme apex); basal 0.8 of T2, basal 0.3 of T3, and basal median areas of T5-8, fuscous-dark brown; remainder of metasoma brownish red. *Length*: 7.8-9.7 mm (9.5 mm); wing 5.1-6.3 mm (6.3 mm); ovipositor 4.6-5.7 mm (5.7 mm).

MALE. *Structure*: Similar to female, except antenna with 38-40 flagellomeres; genal width 0.5; propodeum with carinae stronger and higher; T2 about 2.3 as long as apical width; right gonoforceps and S9 as in figs. 26c-d. *Color*: Similar to female, except that metasoma fuscous except for brownish red of apical 0.1 of T2, lateral ovoid area of T3, T4, and either T5-7 except for basal median area, or only T5 and apical margins of T6-7; gonoforceps brownish red. *Length*: 8.2-8.5 mm; wing 5.5-6.0 mm.

TYPE MATERIAL. Female holotype [HMTC], UNITED STATES—Michigan: Livingston Co., E.S. George Reserve, 27 July 1961, D.F. Owen. Paratypes, UNITED STATES—Alabama: 2FF [USNM], 1F [DBWC], Randolph Co., Wadley, H.H. Smith; Georgia: 2FF [CNCI], Forsyth Co., Forsyth, 24 June 1971, F.T. Naumann; Massachusetts: 1F [MCZC], Dukes Co., Martha's Vineyard, 23 Aug. 1931, C.W. Johnson; New Jersey: 1M [DBWC], Burlington Co., Moorestown, 22 July 1939, H. & M. Townes; North Carolina: 1M [HMTC], Hertford Co., Murfreesboro, 15 Sept. 1938, G.E. Burdick; Pennsylvania: 2MM [HMTC], Lackawanna Co., Spring Brook, 13 Aug. 1944, H.K. Townes; Wisconsin: 1F [USNM], LaFayette Co., Shullsburg, 24 Aug. 1949, R.E. Ryckman.

COMMENT. Females occasionally have dark markings on T5-8.

ETYMOLOGY. From the Greek *hadros*, stout or strong, in reference to the overall bulky appearance.

*Venturia hibiscellae*, new species  
(figs. 14h, 17b, 21r, 24a)

DIAGNOSIS. Recognizable by the rugosopunctate pronotal upper corner, yellow fore and

middle coxae, yellow hind trochanter, light brownish red hind femur, deep mesopleural punctures on a strongly granulate surface, somewhat elongate areola distant from the basal propodeal margin, and dark brown metasoma except for brownish red of the lower lateral 0.5 of T4-7 (completely dark brown in two specimens).

**FEMALE. Structure:** 1. Malar space about 0.4 as long as basal mandibular width. 2. Antenna with 31-32 flagellomeres. 3. Frontal outline of the head similar to fig. 20o, dorsal outline as in fig. 21r; OOD about 0.9. 4. Genal width about 0.4. 5. Mesosomal profile as in fig. 24a; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with epomia strong; lateral area with strong rugae, surface weakly granulate in parts; upper corner rugosopunctate, punctures separated by about 0.3 their diameter. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.2 OD, separated by about 0.3 their diameter or contiguous, on strongly granulate surface; scrobal groove with strong rugae from subalar ridge halfway to scrobe; hypopimeron with punctures on dorsal and upper 0.5 of posterior margin. 8. Propodeum with areola somewhat elongate, juncture of areola-petiolear area moderately constricted (fig. 17b); areola with few rugae on granulate surface, petiolear area with strong transverse rugae; first lateral area with shallow regular punctation on granulate surface, second lateral area rugosopunctate on granulate surface; propodeal neck about 0.6 as long as wide. 9. Hind femur about 5.1 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.4 as long as cell. 11. FMS with petiole about 1.5 as long as postpetiole (fig. 14h). 12. T2 about 2.0 as long as apical width; metasoma moderately compressed. 13. Ovipositor 2.9-3.2 as long as hind femur, moderately curved. **Color:** Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, scape and pedicel ventrally, tegula, fore and middle coxae except for extreme bases, trochanters, dorsal surface of fore tibia, and dorsal basal spot of hind tibia. Remainder of fore and middle legs brown. Hind coxa fuscous. Remainder of hind leg light brownish red, except for dark brown of subbasal and apical bands of hind tibia. Apical 0.2 of T2, and lower lateral areas of T4-7, brownish red; remainder of metasoma dark brown-fuscous. **Length:** 5.7-6.4 mm (7.4 mm); wing 3.6-4.1 mm (4.4 mm); 3.5-3.9 mm (4.3 mm).

**TYPE MATERIAL.** Female holotype [HMTc], UNITED STATES—Maryland: Cal-

vert Co., North Beach, July, M. Vogel. Paratypes, UNITED STATES—New Jersey: 2FF [USNM], Bergen Co., Rutherford, one specimen with label data: "bred from *Gelechia hibiscella*; rec'd from E.L. Dickerson", other specimen with: "H.B. Weiss, coll.; parasitic on larva of hibiscus leaf roller, July 1924, *Gelechia hibiscella* Busck, det. C.H."

**OTHER SPECIMENS.** UNITED STATES—Maryland: 2FF [USNM], Calvert Co., Chesapeake Beach, emerged 24 Aug. 1915, "Host: *Gelechia hibiscella*; H. and DeG. colrs."

**COMMENT.** One of the specimens from Rutherford, NJ, has an almost completely brown middle coxa and lacks distinct brownish red markings on the lower lateral areas of the metasoma. The specimens from Chesapeake Bay, Maryland, have the postpetiole and T2-7 deep reddish brown, with only the apical 0.2 of T2 somewhat lighter. One of them varies in that the upper corner of the lateral area of the propodeum is not rugosopunctate, but rather has close punctures on a weakly granulate surface that has a few weak rugae. It is like the other specimens of the species in all other characters.

**ETYMOLOGY.** The specific name derives from the name of the host, *Chionodes hibiscella* (Busck).

*Venturia latrunculus*, new species  
(figs. 13m, 16k, 20c-d, 23f)

**DIAGNOSIS.** This species can be distinguished from others with a completely dark brown metasoma by the rather triangular frontal outline of the head (fig. 9m), sparsely punctate upper pronotal margin, brownish fore and middle coxae except for the yellowish apices, light brown hind femur, and somewhat elongate areola with a granulate surface.

**FEMALE. Structure:** 1. Malar space about 0.3 as long as basal mandibular width. 2. Antenna with 32 flagellomeres. 3. Frontal and dorsal outlines of head as in fig. 20c-d; OOD about 0.9. 5. Genal width about 0.5. 5. Mesosomal profile as in fig. 23f; mesonotal profile strongly produced; subalar ridge punctate. 6. Pronotum with strong epomia; lateral area with weak rugae on weakly granulate surface; upper corner with scattered punctures on granulate surface, punctures separated by 0.5-1.0 their diameter. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by 0.3-0.5 their diameter (occas. 1.0), on strongly granulate surface; scrobal groove with weak rugae extend-



ing from subalar ridge to scrobe; hypopimeron with sparse punctures on dorsal and posterior surfaces. 8. Propodeum with areola somewhat elongate, juncture of areola-petiole area weakly constricted (fig. 16k); areola strongly granulate, petiole area with fine transverse rugae; first and second lateral areas with regular punctation on granulate surface; propodeal neck about 0.5 as long as wide. 9. Hind femur about 5.3 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.4 as long as cell. 11. FMS with petiole about 1.6 as long as postpetiole (fig. 13m). 12. T2 about 1.8 as long as apical width; metasoma moderately compressed. 13. Ovipositor about 2.5 as long as hind femur, weakly curved. *Color*: Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, scape and pedicel ventrally, tegula, apical 0.3 of fore coxa and extreme apex of middle coxa, and dorsal basal spot of hind tibia. Coxae otherwise dark brown. Remainder of legs brownish red, except hind tibia with brownish sub-basal and apical bands. FMS with petiole black, postpetiole deep brown with apical 0.3 brownish red, brownish red; remainder of metasoma dark brown-fuscous. *Length*: 7.4 mm; wing 4.2 mm; ovipositor 4.1 mm.

**TYPE MATERIAL.** Female holotype [MCZC], UNITED STATES—*Nebraska*: Red Willow Co., Indianola, 5 June, A.P. Morse.

**ETYMOLOGY.** From the Latin *latrunculus*, little brigand, in reference to the vicious nature of the female wasp. It is a noun in apposition.

***Venturia leptogaster* (Cameron)**

(figs. 13a, 15i, 19o-p, 22n, 25j-k)

*Limnerium leptogaster* Cameron, 1904. Trans. American Entomol. Soc. 30: 256. Male (BMNH).

*Limnerium centrale* Cameron, 1904. Trans. American Entomol. Soc. 30: 257. Male (BMNH).

**DIAGNOSIS.** Although known only from male specimens, the narrow and elongate areola, long propodeal neck (0.7 as long as wide), and elongate FMS will distinguish this species.

**MALE.** *Structure*: 1. Malar space about 0.5 as long as basal mandibular width. 2. Antenna with 35 flagellomeres (type with antennae incomplete). 3. Frontal and dorsal outlines of head as in fig. 19o-p; OOD about 1.0. 4. Genal width about 0.5. 5. Mesosomal profile as in fig. 22n; mesonotal profile strongly produced; sub-

alar ridge weakly rugosopunctate. 6. Pronotum with epomia strong; lateral area with strong rugae except where absent adjacent to front margin, on smooth surface; upper corner with punctures separated by 0.5-1.0 their diameter, on granulate surface. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by 0.3-0.5 their diameter, on weakly-moderately granulate surface; scrobal groove with strong rugae extending from subalar ridge to scrobe; hypopimeron without punctures on dorsal margin, few punctures on posterior margin. 8. Propodeum with areola elongate, juncture of areola-petiole area weakly constricted (fig. 15i); carinae not high and strong as is usual for males; areola with weak rugae on smooth surface, petiole area with strong transverse rugae; first lateral area with shallow regular punctation on granulate surface, second lateral area weakly rugosopunctate on smooth surface; propodeal neck about 0.7 as long as wide. 9. Hind femur about 5.4 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.4 as long as cell. 11. FMS with petiole about 2.0 as long as postpetiole, postpetiole depressed (fig. 13a). 12. T2 about 2.7 as long as apical width. 13. Right gonoforceps and S9 as in figs. 25j-k. *Color*: Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, scape and pedicel ventrally, fore and middle coxae except for brownish tinge of basal 0.5, and trochanters. Remainder of fore and middle legs brownish red except for brown of apical fore tarsomeres and middle tarsi. Remainder of hind leg with femur brownish red except for dark brown of basal and apical 0.2; tibia and tarsi dark brown. FMS black. Apical 0.2 of T2, apicolateral corners of T3, lateral area of T4, and triangular regions on lateral areas of T5-6, brownish red; remainder of metasoma fuscous. *Length*: 5.8-6.5 mm (6.2 mm); wing 3.7-3.9 mm (3.8 mm).

**SPECIMENS EXAMINED.** Male holotype of *V. leptogaster* [BMNH], type no. 3.b.1404, MEXICO (no other data). Male holotype of *Limneria centrale* [BMNH], type no. 3.b.1405, MEXICO (no other data). Other specimens, MEXICO—*Veracruz*: 1M [UCDC], Cordoba, 18 July 1966, J.S. Bucket, M. & R. Gardner; UNITED STATES—*Texas*: 1M [HMTG], Cameron Co., Brownsville, 30 Dec. 1980, H. & M. Townes.

**COMMENT.** The holotype of *leptogaster* and the specimen from Brownsville, Texas, have the coloration as in the above description. The type of *centrale* and the specimen from Cordoba,



Mexico, have the metasomal coloring with the brownish red areas reduced, with only hints of brownish red on the lower lateral areas of T4-6. In addition, the Cordoba specimen has the hind femur entirely dark brown.

The female of *leptogaster* is probably similar to that of *mayi*. The two species differ in the following (taking into account that different sexes are being compared): 1) the upper corner of the pronotum is more punctate in *mayi*; 2) the section of the median longitudinal carina basal to the areola is much longer in *mayi*; 3) the propodeal carinae of *leptogaster* are not high and strong, as is usual for males, so that the differences in the pattern of the central area is not due to sexual dimorphism; and 4) the second lateral area in *leptogaster* is weakly rugosopunctate, while that of *mayi* is granulate. I believe these differences are due to specific divergence rather than sexual dimorphism.

***Venturia licina*, new species**

(figs. 4f, 14r, 18j, 21c-d, 25a, 25f-g)

**DIAGNOSIS.** This species can be distinguished by the deep brownish red fore and middle coxae, weakly granulate mesopleurum with punctures separated by 0.5-1.0 their diameter, somewhat elongate areola, predominantly brownish red metasoma, and cylindrical ovipositor that is almost straight except for the sharply curved apex.

**FEMALE. Structure:** 1. Malar space about 0.3 as long as basal mandibular width. 2. Antenna with 32 flagellomeres. 3. Frontal and dorsal outlines of head as in fig. 21c-d; OOD about 0.6. 4. Genal width about 0.3. 5. Mesosomal profile as in fig. 25a; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with eponia strong; lateral area with strong rugae on smooth surface; upper corner rugosopunctate, punctures separated by about 0.3 their diameter. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by 0.5-1.0 their diameter, on weakly granulate surface; scrobal groove with strong rugae from subalar ridge halfway to scrobe; hypopimeron with close punctures on dorsal and posterior margins. 8. Propodeum with areola somewhat elongate, juncture of areola-petiole area moderately constricted (fig. 18j); areola with weak transverse rugae on smooth surface, petiole area with strong rugae, basally reticulate becoming apically transverse; first lateral area with scattered punctures on granulate surface, second lateral area rugoso-

punctate on granulate surface; propodeal neck about 0.7 as long as wide. 9. Hind femur about 5.0 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.5 as long as cell. 11. FMS with petiole about 1.6 as long as postpetiole, postpetiole high (fig. 14r). 12. T2 about 1.8 as long as wide; metasoma moderately compressed. 13. Ovipositor about 2.6 as long as hind femur, cylindrical and almost straight except for sharply upcurved apex (fig. 4f). **Color:** Head and mesosoma black, the following whitish yellow: mandible except for dark brown of base and apex, ventral surfaces of scape and pedicel, palpi, tegula, and fore and middle trochanters. Fore and middle coxae deep brownish red. Remainder of fore and middle legs light brownish red. Hind coxa fuscous. Remainder of hind leg light brownish red except for whitish yellow of first trochanter, and brown of tarsus and sub-basal and apical areas of tibia. FMS with petiole fuscous and postpetiole deep brownish red. Basal 0.4 of T2, and basal 0.3 and midline of T3, dark brown-fuscous; remainder of metasoma brownish red. **Length:** 6.2 mm; wing 3.8 mm; ovipositor 3.5 mm.

**MALE. Structure:** Similar to female except genal width 0.5; propodeum with central area narrower and carinae higher and stronger; T2 about 2.1 as long as wide; right gonoforceps and S9 as in figs. 25f-g. **Color:** Similar to female except basal 0.3-0.5 of fore and middle coxae brown; basal 0.3 of T2, T3, and median basal 0.3-0.5 of T5-7, dark brown-fuscous; remainder of metasoma brownish red. **Length:** 6.9 mm; wing 3.9 mm.

**TYPE MATERIAL.** Female holotype [FSCA], UNITED STATES—Florida: Gainesville, 18 July 1958, "at window 5th floor", H.V. Weems, Jr.. Male paratype [FSCA], UNITED STATES—Florida: Gainesville, Doyle Connor Bldg., 19 Sept. 1972, "blacklight trap", F.W. Mead.

**ETYMOLOGY.** From the Latin *licinus*, bent or turned upward, in reference to the upturned ovipositor apex.

***Venturia longicuspis*, new species**

(figs. 4b, 14b, 17i, 21p, 23i)

**DIAGNOSIS.** Recognizable by the rugosopunctate pronotal upper corner, apically yellow fore and middle coxae, yellow hind trochanters, light brownish red hind femur, somewhat elongate areola adjacent to the basal propodeal margin, short (0.4 as long as wide) propodeal neck, elongate FMS with high postpetiole, short

(1.5 as long as apical width) T2, weakly compressed metasoma, brownish red T4-7 except for a few fuscous spots on the midlines, and short (2.1-2.2 as long as hind femur) ovipositor.

**FEMALE. Structure:** 1. Malar space about 0.4 as long as basal mandibular width. 2. (Antennae incomplete). 3. Frontal outline of head similar to fig. 20c, dorsal outline as in fig. 21p; OOD about 1.0. 4. Genal width about 0.3. 5. Mesosomal profile as in fig. 23i; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with strong epomia; lateral area with rugae strong except where obsolete adjacent to front margin, on smooth surface; upper corner rugosopunctate, punctures separated by about 0.3 their diameter, on smooth surface. 7. Mesopleurum with punctures in central region immediately below hypopleuron about 0.1 OD, separated by 0.3-0.5 their diameter, on weakly granulate surface; scrobal groove with weak rugae from subalar ridge halfway to scrobe; hypopleuron with close punctures on dorsal and posterior margins. 8. Propodeum with somewhat elongate areola, juncture of areola-petiolar area moderately constricted (fig. 17i); areola with weak rugae on weakly granulate surface, petiolar area with strong transverse rugae; first lateral area with regular punctation on weakly granulate surface, second lateral area rugosopunctate on smooth surface; propodeal neck about 0.4 as long as wide. 9. Hind femur about 4.7 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.3 as long as cell. 11. FMS with petiole about 1.8 as long as postpetiole, postpetiole high (fig. 14b). 12. T2 about 1.5 as long as apical width; metasoma weakly compressed. 13. Ovipositor 2.1-2.2 as long as hind femur, straight except for apical curvature; apex elongate (fig. 4b). **Color:** Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, scape and pedicel, tegula, apical 0.5 of fore coxa, apical 0.3 of middle coxa, extreme apex of hind coxa, trochanters, dorsal surface of fore tibia, and dorsal basal spot of hind tibia. Remainder of fore and middle coxae basally brown. Remainder of hind coxa fuscous. Remainder of fore leg light brownish red; remainders of middle and hind legs brownish red. FMS with petiole fuscous; postpetiole dark brown, apical 0.4 brownish red. Basal 0.7 of T2, basal 0.4 of T3, and median areas of T5-7, dark brown-fuscous; remainder of metasoma brownish red. **Length:** 6.8 mm (6.0 mm); wing 3.8 mm (3.4 mm); 2.6 mm (2.6 mm).

**MALE. Structure:** Similar to female except

genal width 0.6; propodeum with carinae stronger and higher; T2 about 2.3 as long as apical width. **Color:** Similar to female except fore and middle coxae with basal areas dark brown; middle coxae with only extreme apex whitish yellow; hind femur with basal and apical darkening; hind tibia brown, darker sub-basally and apically; T3, basal 0.5 of midlines and upper lateral areas of T5-7, dark brown. **Length:** 6.6 mm; wing 3.8 mm.

**TYPE MATERIAL.** Female holotype [CASC, type no. 15722], *UNITED STATES—Texas:* Hopkins Co., 22 Oct. 1939, "S. 1206; R.W.S.". Paratypes, *UNITED STATES—Texas:* 1M [OSUO], same data as for holotype; 1F [OSUO], Hunt Co., 22 Sept. 1939.

**COMMENT.** The females have irregular fuscous areas on the metasoma, presumably due to postmortem changes.

**ETYMOLOGY.** From the Latin, *longus*, long, and *cuspis*, point, in reference to the elongate ovipositor apex.

***Venturia macilenta* (Cresson)**  
(fig. 18h, 27k-l)

*Campoplex macilentus* Cresson, 1873. Proc. Acad. Nat. Sci. Philadelphia 1873: 384. Female (ANSP).

*Venturia nitida* Wahl, 1984. Contrib. American Entomol. Inst. 22: 24. New synonym.

This species can be distinguished from others of the *Nigriscapus* Group by the fuscous or reddish yellow ventral surface of the scape, medially arched occipital carina, presence of an apparent hypopleural extension, yellow fore and middle coxae, weakly granulate or smooth mesopleural surface, shape of the central area of the propodeum (fig. 18h), punctate scutellum and metapleurum, fuscous FMS with the postpetiole apex brownish red, and the fuscous midlines of T4-7. The right gonoforceps and S9 are as in figs. 27k-l.

The range of this species is from Brazil and northern Argentina to southern Arizona (Wahl, 1984).

***Venturia marjoriella*, new species**  
(figs. 7, 13d, 15g, 19s-t, 22d, 25n-o)

**DIAGNOSIS.** This species can be distinguished from others in the *Gelechia* Group by the short to somewhat elongate areola with a granulate surface, fuscous metasoma, and presence of an areolet. The color of the fore and middle coxae varies from whitish yellow to

completely dark brown; the hind femur varies from light brownish red to dark brown.

**FEMALE. Structure:** 1. Malar space about 0.3 as long as basal mandibular width. 2. Antenna with 25-29 flagellomeres. 3. Frontal and dorsal outlines of head as in fig. 19s-t; eyes ventrally convergent; OOD about 0.9. 4. Genal width 0.4. 5. Mesosomal profile as in fig. 22d; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with epomia strong; lateral area with weak rugae on weakly granulate surface; upper corner with sparse punctures on strongly granulate surface. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by 1.0-2.0 their diameter, on moderately granulate surface; scrobal groove with strong rugae from subalar ridge halfway to scrobe; hypopimeron with punctures either sparse on dorsal and upper 0.5 of posterior margins, or completely absent. 8. Propodeum with areola ranging from about as long as wide to somewhat elongate, juncture of areola-petiolear area weakly-moderately constricted (fig. 15g); areola with few transverse rugae on granulate surface, petiolear area with fine transverse rugae; first lateral area with shallow regular punctation on granulate surface, second lateral area weakly rugosopunctate or punctate on granulate surface; propodeal neck about 0.5 as long as wide. 9. Hind femur about 5.1 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.4 as long as cell. 11. FMS with petiole about 1.5 as long as postpetiole, postpetiole high (fig. 13d). 12. T2 about 2.1 as long as apical width; metasoma moderately compressed. 13. Ovipositor 2.3-3.1 as long as hind femur (see comments, below), weakly curved. **Color:** CALIFORNIA: Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, tegula, extreme apices of coxae, trochanters except for dark brown first hind trochanter, and dorsal basal spots of middle and hind tibiae. Scape and pedicel dark brown. Coxae otherwise dark brown-fuscous. Remainder of fore and middle legs light brownish red except for brown of basal and apical 0.2, and posterior surface, of middle tibia. Hind femur, tibia, and tarsi dark brown except for lighter median area of posterior face of femur, and median 0.3 of tibia. FMS black, apex of postpetiole piceous. Apical 0.2 of T2 brownish red; remainder of metasoma dark brown-fuscous. ARIZONA AND NEW MEXICO: Similar to California specimens, except for whitish yellow of ventral surfaces of scape and pedicel, and apical 0.3 of fore coxa; hind femur

and tibia lighter brown, median area of femur with brownish red hints; T4-7 with brownish red highlights. **EASTERN UNITED STATES:** Similar to California specimens, following areas whitish yellow: scape and pedicel ventrally, front coxa and apical 0.5 of middle coxa, extreme apex of hind coxa, trochanters except for brownish tinge of first hind trochanter, and dorsal basal spot of hind tibia. Fore and middle coxae otherwise light brownish yellow to brown. Hind coxa dark brown. Hind femur brownish red except for brown tinge of basal and apical 0.2; hind tibia brown with median 0.5 brownish red. Hind basitarsus with basal 0.8 whitish. **Length:** 4.4-5.6 mm (4.9 mm); wing 2.3-3.2 mm (3.1 mm); ovipositor 2.2-3.4 mm (2.5 mm).

**MALE. Structure:** Similar to female except eyes not ventrally convergent; genal width 0.5; mesopleurum with punctures separated by about their diameter; propodeum with central area narrower and carinae higher and stronger; postpetiole depressed; right gonoforceps and S9 as in figs. 25n-o. **Color:** Similar to females; California specimens with middle femur and tibia, excluding lighter color of anterior face of tibia, brown; coxae completely dark brown-fuscous; hind femur and tibia completely dark brown. Specimens from Arizona and New Mexico similar to females, except that apical margin of upper lateral 0.5 brownish red (or with highlights of that color) of T5-7. Specimens from the eastern United States similar to females, except hind femur with brownish red slightly deeper than that of fore and middle legs. **Length:** 4.5-5.3 mm; wings 2.3-3.2 mm.

**TYPE MATERIAL.** Female holotype [HMTc]. **UNITED STATES—California:** San Diego Co., Potrero, 12 April 1974, H. & M. Townes. Paratypes, **UNITED STATES—California:** 1F [HMTc], San Diego Co., Julian, 8 May 1974, H. & M. Townes; 1F and 3mm [HMTc], 1F and 3MM [DBWC], same data as for holotype except collected 8 April 1974, 12 April 1974, 13 April 1974, and 17 April 1974.

**OTHER SPECIMENS. UNITED STATES—Arizona:** 1F [SEMC], Apache Co., White Mountains, 19 June 1950, R.H. Beamer; 1M [HMTc], Cochise Co., Douglas, 3 Sept. 1974, H. & M. Townes; 1F and 5MM [HMTc], Cochise Co., Portal, 13 Aug. 1978, 14 Aug. 1978, 17 Aug. 1978, 2 Sept. 1978, 3 Sept. 1978, 5 Sept. 1978, H. & M. Townes; 1F [USNM], Pima Co., Tucson, 20 May 1937, R.A. Flock; **California:** 1F [CASC], Monterey Co., Santa Lucia Mountains, Junipero Serra Peak, Aug. 1956, 5000 ft., on *Quercus chrysolepis*, H.B. Leech; 1M [CISC], San Luis Obispo Co., 2.5 mi. S. Creston, 4 May 1962, on *Rhamnus crocea*,





FIGURE 7. Localities of *Venturia marjoriella* Wahl.

C.A. Toschi; 1F [UCRC], Ventura Co., Saticoy, 15 March 1924, C.T. Dodds; *Florida*: 1F [FSCA], Alachua Co., Gainesville, Doyle Conner Bldg., 26 Sept. 1973, "Malaise trap", E.E. Grissell; 1F [FSCA], Gainesville, Pierce's Homestead, "S9-T10S-R18E; Malaise trap", 24 May 1976, W.H. Pierce; 1F [HMTc], Gainesville, 9 July 1981, H. & M. Townes; 1M [DBWC], Columbia and Baker Cos. Line, Osceola Nat. Forest, Jct. Rt. 90, "Malaise trap", 29 March-13 April 1977, J.R. Wiley; 1F [FSCA], Highlands Co., Archbold Biol. Sta., 17 May 1978, H.V. Weems, Jr., & L.K. Klein; 1M [FSCA], same data as before, except collected 14 May 1979 by H.V. Weems, Jr. and S. Halkin; 1M [FSCA], same collection data as before except collected 6 July 1979, H.V. Weems, Jr. and C.W. Harris; 1M [FSCA], Marion Co., 14 mi. W. Ocala, Ross Prairie, 1 Aug. 1975, "blacklight trap no. 6 in live oak hammock", P.C. Drummond; *Georgia*: 1F [CNCI], Forsyth Co., Forsyth, "Malaise trap", July 1970, F.T. Naumann; 7FF and 2MM [USNM], Sumter Co., 6 Sept. 1941, 8 Sept. 1941, 11 Sept. 1941 "1233b4; ex *Polyhymno luteostrigella*", T.L. Bissell; *Maryland*: 1F [USNM], Montgomery Co., Plummiers Island, 4 Sept. 1960, K.V. Krombein; *Massachusetts*: 1F [MCZC], Middlesex Co., Holliston, 10 Aug., N. Banks; *New Jersey*: 3FF [HMTc], Burlington Co., Moorestown, 23 July 1939, H. & M. Townes; *New York*: 2FF and 3MM [HMTc], Monmouth Co., Farmingdale, 15 June 1939, 25 June 1939, 10 July 1939, 16 July 1939, 23 July 1939, H. & M. Townes; *Ohio*: 1F [HMTc], Muskingum Co., Oak Park, 5 mi.

W. New Concord, 15 June 1958, C. Dasch.

COMMENT. Females from the eastern United States occasionally have the rugae of the scrobal groove extending, albeit weakly, to the scrobe. Eastern females have a range of ovipositor lengths from 2.3-2.6; specimens from the western United States have a range of 2.5-3.1. Figure 7 shows the distribution of this species.

ETYMOLOGY. This species is named for Marjorie Townes, whose work, both direct and indirect, with ichneumonids has so advanced our knowledge of this group.

*Venturia masoni*, new species  
(figs. 14t, 18l, 21g-h, 24n, 29g-h)

DIAGNOSIS. This species may be distinguished from others in the Gelechiæ Group by the predominately yellow fore and middle coxae, fuscous first hind trochanter, large and elongate areola near the basal margin of the propodeum, fuscous metasoma, and strongly curved ovipositor.

FEMALE. *Structure*: 1. Malar space about 0.4 as long as basal mandibular width. 2. Antenna with 33 flagellomeres. 3. Frontal and dorsal outlines of head as in fig. 21g-h; eyes convergent ventrally; OOD about 1.0. 4. Genal width about 0.3. 5. Mesosomal profile as in fig. 24n; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with epomia strong; lateral area with weak to moderate rugae, on smooth surface; upper corner with scattered punctures on granulate surface. 7. Mesopleurum with punctures in central region

immediately below hypopimeron about 0.1 OD, separated by 0.3-1.0 their diameter, on weakly granulate surface; scrobal groove with strong rugae from subalar ridge halfway to scrobe; hypopimeron with close, fine punctures on dorsal and posterior margins. 8. Propodeum with areola elongate, juncture of areola-petiolar area moderately constricted (fig. 18l); areola with few weak rugae on granulate surface, petiolar area with strong transverse rugae on smooth surface; first lateral area with shallow scattered punctation on granulate surface, second lateral area weakly rugosopunctate on granulate surface; propodeal neck about 0.7 as long as wide. 9. Hind femur about 5.4 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.4 as long as cell. 11. FMS about 1.7 as long as postpetiole (fig. 14t). 12. T2 about 2.5 as long as apical width; metasoma moderately compressed. 13. Ovipositor 2.8-2.9 as long as hind femur, strongly curved. *Color*: Head and mesosoma black, the following whitish yellow: mandible except for dark brown of base and apex, palpi, tegula, apical 0.7 of fore and middle coxae, fore and middle trochanters, and dorsal surfaces of fore and middle femora and tibia. Basal 0.3 of fore and middle coxae dark brown-fuscous. Hind coxa black. Scape with ventral surface yellowish brown. Remainder of hind leg as follows: second trochanter, dorsal basal spot of tibia, and basal 0.9 of basitarsus, whitish yellow; first trochanter, base and apex of femur, sub-basal region and apex of tibia, and remainder of tarsus, dark brown; remainder of femur and tibia brownish red. Metasoma fuscous-black except for brownish red of apicolateral corners of T2. *Length*: 6.0-6.4 mm (6.3 mm); wing 3.9-4.1 mm (4.0 mm); ovipositor 3.5-3.7 mm (3.6 mm).

*MALE*. *Structure*: Similar to female except antenna with 33-34 flagellomeres; eyes not convergent ventrally; genal width 0.5; propodeum with central area narrower and carinae higher and stronger; postpetiole depressed; right gonoforceps and S9 as in figs. 29g-h. *Color*: Similar to female except basal surface of scape whitish yellow; hind leg with femur, tibia, and tarsi uniformly dark brown except for sub-basal whitish yellow band of tibia; metasoma fuscous except for brownish red of apicolateral corners of T2 and basal 0.5 of T4 excepting midline. *Length*: 6.4-7.0 mm; wing 3.6-4.0 mm.

*TYPE MATERIAL*. Female holotype [CNCI], MEXICO—Durango: 3 mi. E. El Salto, 8500 ft., 10 July 1964, W.R.M. Mason. Paratypes, 1F and 4MM [CNCI], 1F and 2MM [DBWC], same data as holotype except col-

lected 26 June 1964, 4 July 1964, 10 July 1964 and 18 July 1964.

*ETYMOLOGY*. This species is named after W.R.M. Mason, in recognition of his contributions to the systematics of Ichneumonoidea.

*Venturia mayi*, new species

(figs. 14k, 14w, 19m-n, 22c)

*DIAGNOSIS*. This species can be distinguished from others in the Gelechia Group by the yellow fore and middle coxae, dark brown hind femur, base of the areola being distant from the basal propodeal margin, strongly constricted juncture of the areola-petiolar area, elongate (0.8 as long as wide) propodeal neck, and fuscous metasoma except for the brownish red of the lower lateral 0.5 of T4-7.

*FEMALE*. *Structure*: 1. Malar space about 0.3 as long as basal mandibular width. 2. Antenna with 30-31 flagellomeres. 3. Frontal and dorsal outlines of head as in fig. 19m-n; eyes ventrally convergent; OOD about 1.0. 4. Genal width about 0.4. 5. Mesosomal profile as in fig. 22e; mesonotal profile not produced; subalar ridge weakly rugosopunctate. 6. Pronotum with epomia strong; lateral area with rugae moderate to obsolescent, on weakly granulate surface; upper corner with weak punctures separated by either about 0.3 or 0.5-1.0 their diameter, on granulate surface. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by 0.5-1.0 their diameter, on moderately granulate surface; scrobal groove with strong rugae from subalar ridge halfway to scrobe; hypopimeron with sparse punctures on dorsal and posterior margins. 8. Propodeum with areola elongate, juncture of areola-petiolar strongly constricted (fig. 14w); areola granulate, petiolar area with strong transverse rugae; first lateral area with punctures absent and surface granulate, second lateral area weakly rugosopunctate on granulate surface; propodeal neck about 0.8 as long as wide. 9. Hind femur about 5.2 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.4 as long as cell. 11. FMS with petiole about 1.6 as long as postpetiole (fig. 14k). 12. T2 about 2.3 as long as apical width; metasoma moderately compressed. 13. Ovipositor 2.8-2.9 as long as hind femur, moderately curved. *Color*: Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, scape and pedicel ventrally, tegula, fore and middle coxae except for brown of extreme base, extreme apex of hind coxa, trochanters, and dorsal basal spot of hind tibia.

Remainder of fore and middle legs brownish red, either completely or with femur, and sub-basal and apical bands of middle tibia, brown. Hind coxa fuscous; remainder of hind leg either fuscous or dark brown. FMS black. Basal 0.8 of T2, and midlines and upper 0.5 of T3-7, fuscous; remainder of metasoma brownish red. *Length*: 5.5-6.6 mm (5.7 mm); wing 3.2-3.6 mm (3.5 mm); ovipositor 2.9-3.6 mm (3.3 mm).

TYPE MATERIAL. Female holotype [SEMC], *MEXICO*—*Veracruz*: 32 km. N. Cate-maco, UNAM Preserve, 5-7 Jan. 1982, "Mal-aise trap", E.M. May. Paratypes, *MEXICO*—*Veracruz*: 1F [SEMC], same data as holotype except collected 4-5 Jan. 1982; 1F [MSUC], Hueyapan, 30 Oct. 1957, R. & K. Dreisbach.

ETYMOLOGY. This species is named for Ernest M. May, the collector of the holotype.

### *Venturia micheneri*, new species

(figs. 14c, 17g, 20q-r, 24b)

DIAGNOSIS. This species can be recognized by the rugosopunctate pronotal upper corner, yellow fore and middle coxae, brown hind trochanters, brownish red hind femur, elongate areola distant from the basal propodeal margin, granulate areola surface with weak transverse rugae, brownish red T4-7, and large size (9.1-10.4 mm).

FEMALE. *Structure*: 1. Malar space about 0.4 as long as basal mandibular width. 2. Antenna with 40-41 flagellomeres. 3. Frontal and dorsal outlines of head as in fig. 20q-r; OOD about 0.4. 4. Genal width about 0.3. 5. Mesosomal profile as in fig. 24b; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with epomia strong; lateral area with rugae strongly developed except where weaker in central area; upper corner rugosopunctate, punctures shallow, separated by 0.3-0.5 their diameter. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by 0.5-1.0 their diameter, on weakly to moderately granulate surface; scrobal groove with strong rugae extending from subalar ridge to scrobe; hypopimeron with close punctures on dorsal and posterior margins. 8. Propodeum with areola elongate, juncture of areola-petiole areas moderately constricted (fig. 17g); areola with few weak rugae on granulate surface, petiolar area with strong transverse rugae; first lateral area with regular punctation on granulate surface, second lateral area rugosopunctate on granulate surface; propodeal neck about 0.6 as long as wide. 9. Hind femur about 5.2 as long

as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.4 as long as cell. 11. FMS with petiole about 1.6 as long as postpetiole (fig. 14c). 12. T2 about 2.4 as long as apical width; metasoma moderately compressed. 13. Ovipositor 3.1-3.2 as long as hind femur, weakly curved. *Color*: Head and mesosoma black, the following yellow: mandible except for brown of base and apex, palpi, ventral surfaces of scape and pedicel, tegula, fore and middle coxae except for extreme base (or basal 0.5 of middle coxa), and apical 0.2 of hind coxa. Coxae otherwise fuscous. Fore and middle trochanters brownish yellow. Remainder of legs brownish red, except for dark brown of hind trochanters, base and apex of hind tibia, and hind tarsus. FMS black. T2 and basal 0.3 of T3, fuscous; remainder of metasoma brownish red. *Length*: 9.1-10.4 mm (10.4 mm); wing 4.9-5.4 mm (5.4 mm); ovipositor 5.3-5.9 mm (5.9 mm).

TYPE MATERIAL. Female holotype [SEMC], *UNITED STATES*—*Nebraska*: Chase Co., Imperial, 23 June 1982, on *Melilotus officinalis*, C.D. Michener. Paratypes, *UNITED STATES*—*Arizona*: 1F [UCDC], Cochise Co., 14 mi. W. Tombstone, 16 April 1965, F.D. Parker; *New Mexico*: 1F [USNM], Dona Ana Co., Las Cruces, "Ckll. 2941; on *Populus*", T.D.A. Cockerell.

COMMENT. The specimen from Las Cruces, New Mexico, has irregular brown areas on T4-7, and the basal 0.5 of T5 is fuscous. I believe these are postmortem changes.

ETYMOLOGY. This species is named for C.D. Michener, who has accidentally collected some ichneumonids along with his bees from time to time.

### *Venturia micraulax*, new species

(figs. 1c, 2c, 8, 14g, 17k, 21q, 23h, 26g-h)

DIAGNOSIS. This species can be recognized by the pronotal upper corner having shallow regular punctures on a strongly granulate surface, yellow fore and middle coxae, brown to light brownish red hind trochanters and femur, somewhat elongate to elongate areola with a granulate surface, petiole with two weak dorsolateral grooves, and brownish red T4-7 with fuscous coloration varying from the upper 0.5 of the lateral areas to present only along the midlines of the terga.

FEMALE. *Structure*: 1. Malar space about 0.4 as long as basal mandibular width. 2. Antenna with 31-34 flagellomeres. 3. Frontal outline of head similar to fig. 20o, dorsal outline as in fig.



21q; OOD about 0.6. 4. Genal width about 0.3. 5. Mesosomal profile as in fig. 23h; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with epomia weak and almost absent; lateral area with moderate rugae extending to lower corner; dorsal 0.5 of lateral area weakly granulate, otherwise smooth; upper corner with shallow punctures on strongly granulate surface, punctures separated by about 0.3 their diameter. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by 0.3-0.5 their diameter, on strongly granulate surface; scrobal groove with strong rugae from subalar ridge halfway to scrobe; hypopimeron with sparse punctation on dorsal and posterior margins. 8. Propodeum with areola somewhat elongate to elongate, juncture of areola-petiolar area weakly constricted (fig. 17k); areola granulate, petiolar area with numerous fine transverse rugae; first lateral area granulate with numerous shallow punctures, second lateral area rugulosopunctate on granulate surface; propodeal neck about 0.6 as long as wide. 9. Hind femur about 5.1 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.5 as long as cell. 11. FMS with petiole about 1.6 as long as postpetiole (fig. 14g) and with two weak dorsolateral grooves. 12. T2 about 2.0 as long as apical width; metasoma moderately compressed. 13. Ovipositor 2.6-3.1 as long as hind femur, moderately curved. *Color*: Head and mesosoma black, the following pale yellow; mandible except for dark brown of base and apex, ventral surfaces of scape and pedicel, palpi, fore and middle coxae except for dark brown of basal 0.3, fore and middle trochanters, tegula, apex of hind coxa, and dorsal spot at base of hind tibia. Remainder of fore and middle legs light brownish red. Hind leg (excluding dark brown coxa) brown, except for occasionally light brownish red of posterior face of femur and median 0.6 of tibia. FMS black. T2-3, and midlines and upper lateral areas of T4-8, dark brown-fuscous; remainder of metasoma light brownish red. *Length*: 5.1-8.6 mm (7.7 mm); wing 3.3-5.2 mm (4.4 mm); ovipositor 3.0-5.4 mm (4.4 mm).

*MALE*. *Structure*: Similar to female except antenna with 29-33 flagellomeres; genal width 0.5; pronotal rugae weak, absent in central area with surface weakly granulate; propodeum with central area narrower and carinae higher and stronger; right gonoforceps and S9 as in figs. 26g-h. *Color*: Similar to female, except for metasoma: dark brown to fuscous, with amount of brownish red varying from present only on

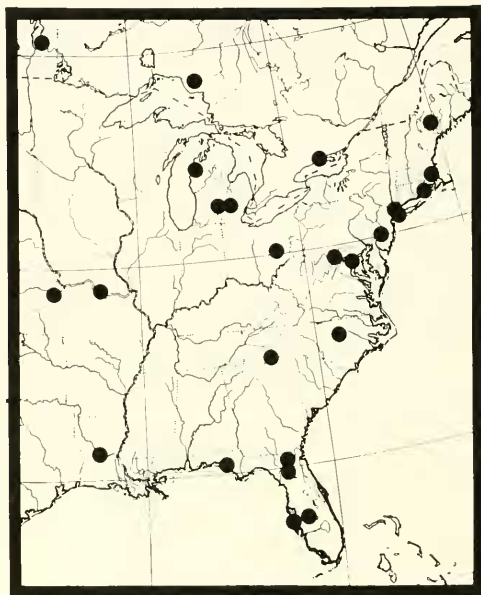


FIGURE 8. Localities of *Venturia micraulax* Wahl.

basolateral corners of T3, to all of T3 except median apical area and apices and lower lateral areas of remaining terga. *Length*: 5.2-8.0 mm; wing 3.2-4.6 mm.

*TYPE MATERIAL*. Female holotype [HMTG], UNITED STATES—Rhode Island: Washington Co., Westerly, 1 Sept. 1936, M. Chapman. Paratypes, UNITED STATES—District of Columbia: 1F [USNM], 23 June 1946, D. Shappiro; Florida: 1M [FSCA], Alachua Co., Gainesville, Doyle Conner Bldg., 1 Aug. 1973, "Malaise trap", E.E. Grissell; 1F [FSCA], Bay Co., St. Andrews State Park, 27 Oct. 1978, "blacklight traps in sand", L. Stange; 1F [FSCA], 1F [DBWC], Columbia and Baker Cos. line, Osceola Nat. Forest, Jct. Rt. 90, 16-30 May 1977 and 13-26 April 1977, "Malaise trap", J.R. Wiley; 2MM [CNCI], Highlands Co., Archbold Biol. Sta., 26 April 1967, R.V. Peterson; 1F [FSCA], same data as preceding except coll. 25 March 1978, L. Stange; 3FF and 1M [FSCA], same data as preceding except coll. 29 March 1978, 3-4 April 1978, and 19-20 April 1978, "insect flight trap", H.V. Weems, Jr. and L.L. Lampert, Jr.; 2MM [FSCA], same data as preceding except coll. 7 June 1979 and 23-24 June 1979, H.V. Weems, Jr., T.A. Webber and C.W. Harris; 5MM [FSCA], Sarasota Co., Myakka State Park near Sarasota, 13-15 March 1978, "flight trap in Palmetto ericaceous scrub", G.B. Fairchild; Kansas: 1F [DBWC], Douglas Co., Lawrence, 6

Sept. 1978, D.B. Wahl; *Maine*: 1F [HMTc], Franklin Co., Dryden, 7 Aug. 1971, H. & M. Townes; *Maryland*: 1F [DBWC], Montgomery Co., Takoma Park, 7 Aug. 1943, H. & M. Townes; *Massachusetts*: 2FF and 1M [MCZC], 1F and 1M [DBWC], Middlesex Co., Holliston, 10 July, 13 July, 18 July, 25 Aug., N. Banks; *Michigan*: 1F [MSUC], Ingham Co., 18 Sept. 1963, R. & J. Matthews; 1M [HMTc], Livingston Co., E.S. George Reserve, 20 July 1961, D. Fower; 1M [MSUC], Manistee Co., Pierport, 4 Sept. 1964, R. & J. Matthews; *Missouri*: 1F [USNM], Boone Co., Columbia, 19 Aug. 1967, "Malaise trap; 7 am-4 pm", F.D. Parker; *New Jersey*: 1F [USNM], Burlington Co., Riverton, 30 Aug. 1927, C.H. Ballou; *New York*: 5FF [HMTc], Dutchess Co., Poughkeepsie, 15 July 1936, 16 July 1936, 19 July 1936, 25 July 1936, H.K. Townes; 1F [MCZC], Nassau Co., Sea Cliff, 5-10 Sept., N. Banks; 2FF [HMTc], Nassau Co., Farmingdale, 16 July 1938 and 28 Aug. 1938, H. & M. Townes; *North Carolina*: 1M [USNM], Wake Co., Raleigh, 19 May 1946, "46-14962; on loblolly pine", W.M. Kulash; *Ohio*: 1F [CEDC], Jefferson Co., Jefferson Co. State Park, 2 July 1974, "trap", J. Mills; 7FF and 3MM [CEDC], Muskingum Co., New Concord, 14 June 1964, 8 Sept. 1964, 6FF and 3MM [CEDC], Muskingum Co., New Concord, 14 June 1964, 8 Sept. 1964, 28 June 1966, 6 July 1966, 7 Sept. 1966, 25-26 Sept. 1967, 10-13 Aug. 1968, 19-22 Sept. 1968, 29-31 Aug. 1973, 1-3 Sept. 1973, "trap", C. Dasch; *Pennsylvania*: 1M [LACM], label reads "F31Pa" = Cumberland Co., Carlisle, July 1918, R.M. Fouts; 1M [USNM], Rockville [note: there are 6 towns in Pennsylvania with this name], 5 July 1909, "311", P.R. Myers; *Rhode Island*: 2FF [HMTc], Washington Co., Westerly, 25 July 1936 and 3 Sept. 1936, M. Chapman; *South Carolina*: 1F [HMTc], Greenville Co., Cleveland, 11 June 1971, G. Townes family.

OTHER SPECIMENS. *CANADA*—*Alberta*: 1F [CNCI], Lac La Biche, "emer. 3 Feb. 1964; F.I.S.; 63A1-665-01; ex *Herculia thymetusalis*"; *Manitoba*: 1F [CNCI], Pine Falls, 11 Oct. 1948, "F.I.S.W. 730C, ex *Herculia thymetusetta*"; *Newfoundland*: 1F [CNCI], Gambo Pond Siding—Alex Bay Dist., emerged 26 March 1954, "host *H. thymetusalis*"; *Ontario*: 13FF and 8 MM [CNCI], Black Sturgeon Lake, reared from *Picea mariana*, emerged 13 June 1962, 14 June 1962, 15 June 1962, 17 June 1962, 20 June 1962, 23 June 1962; 1F [CNCI], Brighton, 14 Sept. 1954, J.C. Martin; 2MM [CNCI], Hill-sport, emerged 17 Sept. 1965, "ex *Holcocera immaculella*"; 1F [CNCI], Innisville, 12 Oct.

1963, W.R.M. Mason; 1F and 1M [CNCI], White River, emerged 13 Sept. 1965 and 17 Sept. 1964, "ex *Holcocera immaculella*".

COMMENT. Most of the specimens from Canada are in the upper part of the size range for this species, with specimens from the United States averaging about 5.5-6.5 mm in length. The mesosoma of the larger specimens is disproportionately larger in relation to the head than in smaller individuals. Color patterns and surface sculpture are the same except for a greater amount of metasomal fuscous coloration in the larger specimens. Some females have the hind leg (excluding the coxa) deep brownish-red. The postpetiole is sometimes piceous. The metasoma sometimes has the apicolateral areas of T2-3, and all of the lateral areas of T4-8, light brownish red. Figure 8 shows the distribution of this species.

ETYMOLOGY. From the Greek *mikros*, small, and *aulax*, furrow, in reference to the two weak lateral grooves of the dorsal surface of the petiole.

*Venturia mulleola*, new species  
(figs. 13f, 15k, 19y-z, 22a)

DIAGNOSIS. Similar to other small species with roundish heads, parallel inner ventral margins of the compound eyes, and sparsely punctate pronotal upper corners; it can be distinguished by the deep brownish red mesosoma, lack of pronotal rugae, yellow fore and middle coxae, somewhat elongate and granulate areola, stout FMS with depressed postpetiole, and dark brown metasoma with lower lateral areas of T4-7 brownish red.

FEMALE. *Structure*: 1. Malar space about 0.4 as long as basal mandibular width. 2. Antenna with 29 flagellomeres. 3. Frontal and dorsal outlines of head as in fig. 19y-z; OOD about 0.8. 4. Genal width about 0.3. 5. Mesosomal profile as in fig. 22a; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with epomia absent; lateral area with rugae absent, surface granulate; upper corner with few punctures on strongly granulate surface; collar granulate. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by 1.0-2.0 their diameter, on strongly granulate surface; scrobal groove with fine rugae from subalar ridge to 0.6 of distance to scrobe; hypopimeron with few punctures on dorsal and posterior margins. 8. Propodeum with areola somewhat elongate, juncture of areola-petiolar area moderately constricted (fig. 15k); areola strongly granulate, petiolar area with fine trans-

verse rugae on granulate surface; first and second lateral areas with sparse weak punctures on granulate surface; propodeal neck about 0.5 as long as wide. 9. Hind femur about 4.2 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, about 0.5 as long as cell. 11. FMS with petiole about 1.6 as long as postpetiole (fig. 13f). 12. T2 about 1.9 as long as apical width; metasoma moderately compressed. 13. Ovipositor about 2.8-2.9 as long as hind femur, weakly curved. *Color:* Head and mesosoma deep brownish red-piceous, the following whitish yellow: mandible except for brown of base and apex, palpi, scape and pedicel ventrally, tegula, apical 0.7 of fore and middle coxae, extreme apex of hind coxa, fore and middle trochanters, and dorsal basal spots of tibiae. Fore and middle coxae otherwise brownish yellow. Remainder of fore and middle legs light brownish red. Hind trochanters and remainder of hind coxa brown. Hind femur except for basal and apical 0.1-0.2, and median 0.3 of tibia, brownish red; remainder of femur, tibia, and tarsi, brown. Metasoma deep brownish red except for ventral 0.3 of lateral areas of T4-6. *Length:* 4.9 mm (4.7 mm); wing 3.1 (3.1 mm); ovipositor 2.7 mm (2.7 mm).

**TYPE MATERIAL.** Female holotype [HMTc], *UNITED STATES—South Carolina:* Greenville Co., Cleveland, 12 June 1961, G.F. Townes. Paratype [HMTc], same data as for holotype except collected 25 May 1961.

**ETYMOLOGY.** From the Latin *mulleolus*, in reference to the reddish color of the mesosoma.

*Venturia musae* Wahl  
(fig. 18g)

*Venturia musae* Wahl, 1984. Contrib. American Entomol. Inst. 22: 13. Female (HMTc).

Distinguishable from other species in the *Nigriscapus* Group by the yellow ventral surface of the scape, medially arched occipital carina, lack of an apparent hypoepimeral extension, yellow fore and middle coxae, coarse mesopleural punctation on a strongly granulate surface, weak median and lateral longitudinal carinae of the propodeum (fig. 18g), coarsely rugosopunctate scutellum and metapleurum, and brownish red FMS.

This species is found in Mexico (Veracruz) and Guatemala.

*Venturia nickelsenii*, new species  
(figs. 14l, 16g, 21n, 23n)

**DIAGNOSIS.** Distinguishable from other

species with a completely fuscous metasoma by the rugosopunctate pronotal upper corner, moderately granulate mesopleurum, predominantly dark brown coxae, brown first hind trochanter and hind femur, short areola with the surface granulate, and the moderately curved ovipositor.

**FEMALE. Structure:** 1. Malar space about 0.4 as long as basal mandibular width. 2. (Antennae incomplete). 3. Frontal outline of head similar to fig. 20o, dorsal outline as in fig. 21n; OOD about 0.9. 5. Mesosomal profile as in fig. 23n; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with epomia strong; lateral area with strong rugae on smooth surface, some rugae intruding into upper corner; upper corner rugosopunctate on granulate surface, punctures separated by about 0.3 their diameter. 7. Mesopleurum with punctures in central region immediately below hypoepimeron about 0.1 OD, separated by 0.3-0.5 their diameter, on moderately granulate surface; scrobal groove with strong rugae from subalar ridge halfway to scrobe; hypoepimeron with sparse punctures on dorsal and posterior margins. 8. Propodeum with areola as long as wide, juncture of areola-petiole area weakly constricted (fig. 16g); areola with granulate surface, petiole area with weak reticulate rugae on granulate surface; first lateral area with sparse punctures on granulate surface, second lateral area rugosopunctate on granulate surface; propodeal neck about 0.6 as long as wide. 9. Hind femur about 5.0 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.3 as long as cell. 11. FMS with petiole about 1.6 as long as postpetiole (fig. 14l). 12. T2 about 1.7 as long as apical width; metasoma moderately compressed. 13. Ovipositor about 2.8 as long as hind femur, weakly curved; apical notch almost absent. *Color:* Head and mesosoma black, the following whitish yellow: mandibles except for brown of base and apex, palpi, scape ventrally, tegula, apical 0.3 of fore and middle coxae, and trochanters except for dark brown of second hind trochanter. Remainder of fore and mid legs brownish red. Coxae otherwise dark brown-fuscous. Remainder of hind leg with femur and tibia dark brown, except for lighter median 0.5 of tibia; hind tarsi brown. FMS black; T2-7 fuscous. *Length:* 6.4 mm; wing 4.0 mm; ovipositor 3.3 mm.

**TYPE MATERIAL.** Female holotype [LACM], *UNITED STATES—California:* Santa Barbara Co., Summerland, 26 April 1971, C.W. Kirkwood.

**ETYMOLOGY.** This species is named for



John W. Nickelsen, an economic entomologist who has done much to promote rational pest control methods in California.

***Venturia nigricoxalis* (Cushman)**

(figs. 9, 14a, 16i, 20g-h, 24d, 28e-f)

*Idechthis nigricoxalis* Cushman, 1915. Proc. United States Nat. Mus. 48: 512. Male (USNM).

**DIAGNOSIS.** This species can be distinguished by the rugosopunctate pronotal upper corner, fuscous fore and middle coxae, brown trochanters and femora, elongate areola distant from the basal propodeal margin, moderately constricted juncture of the areola-petiolar area, brownish red T4-7, long ovipositor (3.5-3.8 as long as hind femur), and large size (8.4-11.4 mm).

**FEMALE. Structure:** 1. Malar space about 0.4 as long as basal mandibular width. 2. Antenna with 35-38 flagellomeres. 3. Frontal and dorsal outlines of head as in fig. 20g-h; OOD about 0.7. 4. Genal width about 0.3. 5. Mesosomal profile as in fig. 24d; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with strong epomia; lateral area with rugae strong and extending to lower corner, on smooth surface; upper corner rugosopunctate, punctures separated by about 0.3 their diameter. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.2 OD, separated by 0.3-0.5 their diameter, on weakly granulate surface; scrobal groove with strong rugae extending from subalar ridge to scrobe; hypopimeron with close, well-defined punctures on dorsal and posterior margins. 8. Propodeum with areola elongate, juncture of areola-petiolar area moderately constricted (fig. 16i); areola with weak transverse rugae on smooth surface, petiolar area reticulostriate; first lateral area with few shallow punctures on granulate surface, second lateral area coarsely rugosopunctate on weakly granulate surface; propodeal neck about 0.6 as long as wide. 9. Hind femur about 5.5 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk 0.5 as long as cell. 11. FMS with petiole about 1.6 as long as postpetiole, postpetiole depressed (fig. 14a); S1 with median 0.4 usually with two long shallow grooves. 12. T2 about 2.1 as long as apical width; metasoma moderately compressed. 13. Ovipositor 3.5-3.8 as long as hind femur, moderately curved. **Color:** Head and mesosoma black, the following dark brown: mandible, scape, pedicel, tegula, legs except for

brownish red of fore and middle femora and tibiae and brownish yellow dorsum of fore tibia. Palpi brownish yellow. FMS black; T2 and basal 0.4 of T3, dark brown; remainder of metasoma brownish red. **Length:** 8.4-11.4 mm (9.7 mm); wing 5.2-6.7 mm (5.4 mm); ovipositor 5.7-7.5 mm (6.0 mm).

**MALE. Structure:** Similar to female except antenna with 33-37 flagellomeres, mesopleural punctures about 0.1 OD and separated by about their diameter, petiole more slender, propodeum with central area narrower and carinae stronger and higher; right gonoforceps and S9 as in figs. 28e-f. **Color:** As in female, except scape and pedicel ventrally brownish red; fore and middle coxae fuscous; T3 dark brown. **Length:** 8.4-11.6 mm.; wing 4.6-7.0 mm.

**SPECIMENS EXAMINED.** Female holotype (USNM, type no. 18354), *UNITED STATES—New York:* Niagara Co., Youngstown, 31 July 1905, "Quaintance no. 574", F. Johnson. Allotype (USNM, type no. 18354), *UNITED STATES—Virginia:* Fairfax Co., Vienna, 11 Aug. 1913, "Quaintance no. 7966", reared by R.A. Cushman. Paratypes, *UNITED STATES—Georgia:* 1F [USNM], type no. 18354, Peach Co., Ft. Valley, 6 Aug. 1905, "Quaintance no. 407", J.H. Beattie; *Ohio:* 1M [USNM], type no. 18354, Ottawa Co., Lakeside, "on peach; Quaintance no. 5626", H.F. Wilson. Other specimens, *CANADA—Ontario:* 1M [DBWC], Ancaster, 1 Sept. 1959, J.E.H. Martin, *UNITED STATES—Alabama:* 1M [CASC], Pike Co., 8 mi. W. Brundidge, 11 July 1953, E.S. Ross; *Arkansas:* 1M [USNM], Logan Co., Sept. 1965, "bred from lesser peach



FIGURE 9. Localities of *Venturia nigricoxalis* (Cush.).

tree borer"; *Florida*: 1F [CNCI], Gasden Co., Tallahassee, Tall Timber Res. Sta., 16 May 1968, G. Heinrich; *Georgia*: 1F [FSCA], Clarke Co., Athens, Whitehall Preserve, 2 May 1979, "insect flight trap", R.H. Turnbow, Jr.; 3FF [CNCI], Forsyth Co., Forsyth, 18-23 May 1970 and July 1970, "Malaise trap", F. Naumann; 1M [USNM], Peach Co., Ft. Valley, 31 May 1905, "on peach", J.H. Beattie; *Indiana*: 2FF and 1M [USNM], Knox Co., 3 May 1967 and 5 May 1967, "peach wood", R. Dolphin; 1F [USNM], Knox Co., coll. by McClelland, May 1963, "Peach Wood Insectary"; *Maryland*: 2FF and 2MM [HMTG], Montgomery Co., Takoma Park, 4 July 1942, H. & M. Townes; Prince Georges Co., Adelphi, 26 March 1968, "in house", E. Hodges; *Michigan*: 1F [USNM], Allegan Co., Douglas, "Quaintance no. 5926", coll. by Brancher; 1M [MSUC], Kalamazoo Co., Gull Lake Biol. Sta., 27 July 1965, G.C. Eickwort; *New Jersey*: 1M [USNM], Gloucester Co., June 1930, "reared from *Euzophora* sp."; 1M [USNM], Bergen Co., Hackensack, 7 April 1926, "reared from *Euzophora semifuneralis*"; *New York*: 1F [USNM], Queens Co., Woodhaven, 20 May 1919, "ex *Synanthedon acerni*", G.P. Englehardt; 1M [HMTG], Westchester Co., Scarsdale, 18 June 1957, G.R. Ferguson; *Ohio*: 1F [OSUC], Montgomery Co., 18 Aug. 1943, F.D. DeGant; *Pennsylvania*: 1F [USNM] and 1M [MCZC], no locality, coll. by F.E. Melsheimer; 1M [USNM], Dauphin Co., Harrisburg, 13 June 1908, P.R. Myers; *South Carolina*: 2FF [USNM], York Co., Rock Hill, reared 25 May 1913 and 3 June 1913, "in bark of tulip from *Euzophora ostricolorella*", "11147b Hopk.U.S." and "11147d Hopk.U.S.", C. Heinrich; *Virginia*: 1F [USNM], Arlington Co., Glencarlyn, reared 17 Oct. 1913, "par. of *Euzophora ostricolorella*"; 11147H—Hopk. U.S.", C. Heinrich; 3FF and 1M [USNM], Winchester, 5 May 1919 and 16 May 1919, "bred from *E. semifuneralis*"; Quaintance no. 1402", E.B. Blakeslee; *West Virginia*: 2FF [USNM], 1F [HMTG], 1M [USNM], 1M [HMTG], Jefferson Co., Kearneysville, 26 May 1939, 25 July 1939, 1 Aug. 1939, "biological orchard".

COMMENT. In males, T5-7 occasionally have the basal 0.3 and midlines brown. One male (Harrisburg, PA) has the apices of the postpetiole and T2 brownish red, and only the basal 0.3 of T3 dark brown.

Hope and Pless (1979) discuss the biology of *V. nigricoxalis* in relation to *Euzophora ostricolorella*. Figure 9 shows the distribution of this species.

### *Venturia nigricapax* (Viereck)

(figs. 3k, 3n, 10, 18f, 27i-j)

*Idecthis nigricapax* Viereck, 1921. Psyche 28: 77. Female (MCZC).

*Idecthis mimicus* Viereck, 1926. Proc. and Trans. Roy. Soc. Canada (3) 20 (5): 185. Male (CNCI).

*Venturia* sp. D, Finlayson, 1975. Mem. Entomol. Soc. Canada 94: 25.

*V. nigricapax* was redescribed by Wahl (1984). It can be distinguished from other species of the *Nigricapax* Group by the fuscous ventral surface of the scape, medially straight occipital carina, lack of an apparent hypopimeral extension, strongly granulate mesopleurum, strong propodeal carinae, black FMS with the apex of the postpetiole brownish red, and coarsely rugosopunctate scutellum and metapleurum. The right gonoforceps and S9 are as in figs. 28e-f. Most North American specimens have the basal 0.5 of the fore and middle coxae yellow, and the middle and hind femora brownish red. Specimens with fuscous coxae from the northeastern United States, southeastern Canada, and Mexico also have the middle and hind femora brown.

In addition to the specimens from Oaxaca reported earlier (Wahl, 1984), I have recently examined two additional Mexican specimens: *Puebla*: 1M [SEMC], 6 mi. E. Huauchinango, 21 Aug. 1962, 4050 ft., Univ. Kansas Mexican Expedition; *Veracruz*: 1F [SEMC], Rio Jamapa, NE of Coscomatepec, 8 Aug. 1969, 4300 ft., Univ. Kansas Mexican Expedition. Fig. 10 shows the distribution of this species.

### *Venturia platyura*, new species

(figs. 3c, 14i, 17h, 21l, 23l, 25l-m)

DIAGNOSIS. Recognizable by the pronotal upper corner being rugosopunctate on a granulate surface, apically yellow fore and middle coxae, brown-brownish red hind coxa with the apical 0.3 whitish yellow, elongate areola with a granulate surface, depressed postpetiole, weakly compressed metasoma, brownish red T4-7 (except for a few fuscous spots on the midlines), and strongly curved and laterally compressed ovipositor.

FEMALE. *Structure*: 1. Malar space about 0.4 as long as basal mandibular width. 2. Antenna with 36-39 flagellomeres. 3. Frontal outline of head similar to fig. 20o, dorsal outline as in fig. 21l; OOD about 0.7. 4. Genal width about 0.4. 5. Mesosomal profile as in fig. 23l; mesonotal

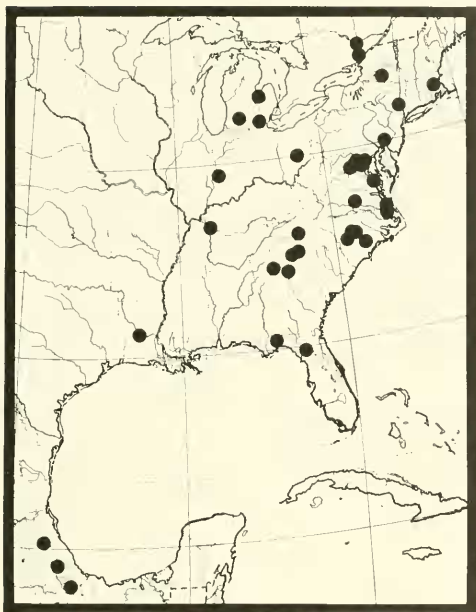


FIGURE 10. Localities of *Venturia nigri-scapus* (Vier.).

profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with strong epomia; lateral area with strong rugae except where absent adjacent to front edge, on weakly granulate surface; upper corner rugosopunctate, punctures separated by about 0.3 (or occas. confluent) their diameter, surface strongly granulate. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by 0.5-1.0 their diameter, on moderately granulate surface; scrobal groove with strong rugae extending from subalar ridge to near scrobe; hypopimeron with close, well-defined punctures on dorsal and posterior margins. 8. Propodeum with areola elongate, juncture of areola-petiolar area strongly constricted (fig. 17h); areola with few weak rugae on strongly granulate surface, petiolar area with transverse rugae on granulate surface; first lateral area with shallow punctures on granulate surface, second lateral area rugosopunctate on smooth surface; propodeal neck about 0.6 as long as wide. 9. Hind femur about 5.0 as long as wide; hind tibial spurs about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about as long as cell. 11. FMS with petiole about 1.7 as long as postpetiole, postpetiole low (fig. 14i). 12. T2 about 1.6 as long as apical width; metasoma

weakly compressed. 13. Ovipositor 2.6-2.8 as long as hind femur, weakly curved and strongly laterally compressed. *Color*: Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, ventral surfaces of scape and pedicel, tegula, fore and middle coxae except for dark brown of extreme base, apical 0.3 of hind coxa, trochanters except for light brown of first hind trochanter, and dorsal surfaces of fore and middle tibia. Remainder of fore and middle legs light brownish red. Hind coxa with basal 0.7 centrally dark brown, surrounded by brownish red; remainder of hind leg brownish red, except for darker sub-basal and apical bands of tibia, and darker apices of tarsomeres. FMS with petiole fuscous, postpetiole ranging from fuscous to deep brownish red with apex lighter. Basal 0.8 of T2, basal 0.2-0.3 of T3, and midlines (usually) of T5-7, dark brown-fuscous; remainder of metasoma brownish red. *Length*: 5.9-9.9 mm (7.7 mm); wing 3.2-5.4 mm (4.4 mm); ovipositor 3.2-4.9 mm (4.1 mm).

*MALE. Structure*: Similar to female except antenna with 35-39 flagellomeres; genal width about 0.5.; propodeum with carinae higher and stronger, areola with transverse rugae and juncture of areola-petiolar area more strongly constricted; right gonoforceps and S9 as in figs. 25l-m. *Color*: Similar to female, except legs with femora, tibia and tarsi light brownish red except for brown hind tarsi; hind coxa with basal 0.7 dark brown; T3, basal 0.5 of midlines and upper lateral areas of T5-7, dark brown; gonoforceps brownish red. *Length*: 6.0-8.0 mm; wing 3.4-4.7 mm.

*TYPE MATERIAL*. Female holotype [SEMC], UNITED STATES—Texas: Matagorda Co., 4 May 1953, L.D. Beamer. Paratypes, UNITED STATES—Florida: 1F and 2MM [FSCA], Alachua Co., Gainesville, Pine Hill Estates, "Malaise trap", H.V. Weems, Jr.; 1M [DBWC], Columbia and Baker Cos. line, Osceola Nat. Forest at junct. of Rt. 90, 13-26 April 1977, "Malaise trap", J.R. Wiley; 1F [FSCA], Highlands Co., Archbold Biol. Sta., 2-4 Feb 1979, "insect flight trap", H.V. Weems, Jr. and S. Halkin; 1F [CNCI], Manatee Co., Onaco, 29 March 1965, J.C. Martin; 3FF and 2MM [FSCA], 1M [DBWC], Marion Co., 9 mi. SSW Ocala, 13 Oct.-5 Nov. 1975, "Malaise trap in turkey oak", J. Wiley; 1F [CASC], Putnam Co., Crescent City, April 1908, M.C. Van Duzee; 1F [DBWC], Putnam Co., 2 mi. NW Orange Springs, 22 Oct. 1975, "blacklight trap", D. Bowman; Missouri: 1M [HMTc], Taney Co., 13 July 1975, S. & J. Peck; South Carolina or Florida: 1F and 1M



[USNM], no other data, 15 May, "ex *Platoceticus gloveri*," F.M. Jones.

COMMENT. In females, the basal 0.7 of the hind coxa can be completely dark brown. A female specimen from Mexico (*Sinaloa*: 20 mi. E. Concordia, 3000', 8 Aug. 1964, W.R.M. Mason [CNCI]) resembles the typical female of this species except for a shorter propodeal neck (0.4 as long as wide) and the presence of a weak nodus on the ovipositor apex just before the dorsal subapical notch (as in *V. eremna*).

ETYMOLOGY. From the Greek *platy*, flat, and *oura*, tail, in reference to the laterally compressed ovipositor.

*Venturia portalsensis*, new species

(figs. 3e, 3j, 14j, 16f, 21k, 23c, 26k-l)

DIAGNOSIS. This species can be distinguished by the rugosopunctate pronotal upper corner, yellow fore and middle coxae, yellow hind trochanters, closely punctate (punctures separated by about 0.3-0.5 their diameter) mesopleurum, elongate areola distant from the basal propodeal margin, strongly constricted juncture of the areola-petiolear area, high postpetiole, brownish red T4-7, and rather short (2.4-2.6 as long as hind femur) ovipositor.

FEMALE. *Structure*: 1. Malar space about 0.4 as long as basal mandibular width. 2. Antenna with 36-39 flagellomeres. 3. Frontal outline of head similar to fig. 20o, dorsal outline as in fig. 21k; OOD about 0.9. 4. Genal width about 0.4. 5. Mesosomal profile as in fig. 23e; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with epomia strong; lateral area with strong rugae on smooth surface; upper corner rugosopunctate, punctures separated by about 0.3 their diameter. 7. Mesopleurum with punctures in central region immediately below hypoepimeron about 0.1 OD, separated by 0.3-0.5 their diameter, on moderately granulate surface; scrobal groove with strong rugae which become obsolescent near scrobe; hypoepimeron with punctures on dorsal and upper 0.5 of posterior margins. 8. Propodeum with areola elongate, juncture of areola-petiolear area strongly constricted (fig. 16f); areola with weak rugae on weakly granulate surface, petiolear area with strong transverse rugae on smooth surface; first lateral area with regular punctuation on granulate surface, second lateral area centrally with punctures on weakly granulate surface, rugulose toward edges; carinae forming second lateral area often irregular in height and outline; propodeal neck about 0.5 as long as wide. 9. Hind femur about 5.2 as long

as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.5 as long as cell. 11. FMS with petiole about 1.7 as long as postpetiole, postpetiole high (fig. 14j). 12. T2 about 2.2 as long as apical width; metasoma moderately compressed. 13. Ovipositor 2.4-2.6 as long as hind femur, moderately curved. *Color*: Head and metasoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, ventral surfaces of scape and pedicel, tegula, fore and middle coxae except for extreme base, apical 0.2 of hind coxa, trochanters except for faint brownish tinge of posterior face of first hind trochanter, dorsal surface of front tibia, and dorsal basal spot of hind tibia. Remainder of fore and middle legs light brownish red. Hind coxa fuscous except as noted. Remainder of hind leg light brownish red, except for brown of sub-basal region and apical 0.3 of tibia, and apices of tarsomeres. FMS black except for brownish red of apical 0.2 of postpetiole. Basal 0.7 of T2 and basal 0.3 of T3, fuscous; metasoma otherwise light brownish red. *Length*: 7.1-8.6 mm (7.4 mm); wing 3.9-4.6 mm (4.3 mm); ovipositor 3.1-4.0 mm (3.9 mm).

MALE. *Structure*: Similar to female except antenna with 37-39 flagellomeres; genal width about 0.5; propodeum with carinae higher and stronger; areola and petiolear area separated by strong transverse carina; right gonoforceps and S9 as in figs. 26k-l. *Color*: Similar to female except brown of first hind trochanter more pronounced; base and apex of hind femur brown; hind tibia and tarsus dark brown except for lighter median area of tibia; basal 0.9 of T2, T3, median basal 0.3-0.8 of tergum 5, basal 0.8-0.9 of T6-7, and gonoforceps, fuscous to dark brown. *Length*: 7.1-8.6 mm; wing 4.3-4.9 mm.

TYPE MATERIAL. Female holotype [HMTc], UNITED STATES—Arizona: Cochise Co., Portal, 17 Aug. 1974, H. & M. Townes. Paratypes, UNITED STATES—Arizona: 1F [DBWC], Cochise Co., Southwest Research Station, 5 mi. W. Portal, 5400 ft., 31 July 1965; 11FF and 26MM [HMTc], 1F and 2MM [DBWC], same data as holotype except collected on following dates in 1974: 10 Aug., 11 Aug., 12 Aug., 13 Aug., 15 Aug., 16 Aug., 17 Aug., 18 Aug., 20 Aug., 22 Aug., 24 Aug., 31 Aug., 1 Sept., 5 Sept.; Texas: 1F and 3MM [HMTc], 1F [DBWC], Culberson Co., McKittrick Canyon, 5200 ft., 15 Aug. 1961, 16 Aug. 1961, 17 Aug. 1961, 19 Aug. 1961.

COMMENT. Males sometimes have the hind femur almost completely brown with only a small median area brownish red.

ETYMOLOGY. The specific name is derived from that of the type locality in Arizona.

***Venturia prolixa*, new species**

(figs. 14m, 17d, 21s, 23c)

DIAGNOSIS. This species can be recognized by the rugosopunctate pronotal upper corner, elongate mesosoma (fig. 23c), yellow fore and middle coxae, light brown hind trochanter, elongate (9.1 as long as wide) hind femur, elongate and sharply pointed areola near the basal propodeal margin, elongate FMS with depressed postpetiole, brownish red T4-7, and large size (10.5-11.6 mm).

FEMALE. *Structure*: 1. Malar space about 0.3 as long as basal mandibular width. 2. Antenna with 44 flagellomeres. 3. Frontal outline of head similar to fig. 20a, dorsal outline as in fig. 21s; OOD about 0.5. 4. Genal width about 0.3. 5. Mesosomal profile as in fig. 23c; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with epomia strong; lateral area with rugae weak or obsolescent, strong only in lower corner, on weakly granulate surface; upper corner weakly rugosopunctate on granulate surface, punctures separated by about 0.3 their diameter. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by 0.3-0.5 their diameter, on strongly granulate surface; scrobal groove with fine rugae from subalar ridge to near scrobe; hypopimeron with close punctures on dorsal and posterior margins. 8. Propodeum with areola elongate, juncture of areola-petiole area weakly constricted (fig. 17d); areola with fine transverse rugae on granulate surface, petiole area with strong transverse rugae on smooth surface; first lateral area with shallow punctures on strongly granulate surface, second lateral area weakly rugosopunctate on strongly granulate surface; propodeal neck about 0.7 as long as wide. 9. Hind femur about 9.1 as long as wide; hind tibial spur about 0.3 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.4 as long as cell. 11. FMS with petiole about 1.4 as long as postpetiole, postpetiole depressed (fig. 14m); S1 with weak longitudinal wrinkles. 12. T2 about 3.0 as long as apical width; metasoma moderately compressed. 13. Ovipositor 2.6-2.7 as long as hind femur, almost straight (note that femur is unusually long and that ovipositor is really about length of that of *erythropus*). *Color*: Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, ventral surfaces of scape and pedicel, tegula, fore and middle trochan-

ters, and dorsal surfaces of fore and middle tibia. Hind coxa dark brown, apical 0.2 brownish yellow. Remainder of legs light brownish red. FMS with petiole fuscous, postpetiole deep brownish red to piceous, apex lighter; basal 0.7 dark brown, remainder of metasoma brownish red. *Length*: 11.6 mm (10.5 mm); wing 7.2 mm (6.9 mm); ovipositor 6.2 mm (5.9 mm).

TYPE MATERIAL. Female holotype [CNCI], UNITED STATES—Texas: Jeff Davis Co., Ft. Davis, 24 May 1959, 5000 ft., W.R.M. Mason. Paratype, UNITED STATES—Utah: 1F [USNM], Sevier Co., Richfield, 15 Aug. 1930, "light trap".

ETYMOLOGY. From the Latin *prolixus*, stretched out or long, in reference to the long legs.

***Venturia pullata*, new species**

(figs. 13j, 14x, 19g-h, 23a)

DIAGNOSIS. Similar to other small species with roundish heads, parallel inner ventral margins of the compound eyes, and sparsely punctate pronotal upper corners; it can be distinguished by the weak pronotal rugae, mesopleural punctures separated by 1.0-2.0 their diameter, elongate areola with the juncture of the areola-petiole area strongly constricted, dark brown hind femur, and fuscous coxae and metasoma.

FEMALE. *Structure*: 1. Malar space about 0.3 as long as basal mandibular width. 2. Antenna with 29 flagellomeres. 3. Frontal and dorsal outlines of head as in fig. 19g-h; OOD about 0.8. 4. Genal width about 0.3. 5. Mesosomal profile as in fig. 23a; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with epomia strong; lateral area with rugae weak except where absent adjacent to front edge; upper corner with sparse punctures on moderately granulate surface; collar smooth. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by about their diameter, on weakly-moderately granulate surface; scrobal groove with strong rugae from subalar ridge halfway to scrobe; hypopimeron with punctures absent on dorsal and posterior margins. 8. Propodeum with areola elongate, juncture of areola-petiole area strongly constricted (fig. 14x); areola granulate, petiole area with fine transverse rugae on granulate surface; first lateral area with regular punctation on granulate surface, second lateral area with shallow regular punctation on granulate surface, and with rugae present along margins;

propodeal neck about 0.5 as long as wide. 9. Hind femur about 5.7 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.3 as long as cell. 11. FMS with petiole about 1.6 as long as postpetiole, postpetiole high (fig. 13j). 12. T2 about 2.4 as long as apical width; metasoma moderately compressed. 13. Ovipositor about 2.8 as long as hind femur, weakly curved. *Color*: Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, scape ventrally, tegula, extreme apices of coxae, trochanters except for dark brown first hind trochanter, and dorsal basal spots of middle and hind tibiae. Coxae otherwise dark brown-fuscous. Remainder of fore and middle legs brownish red except for darker sub-basal and apical bands of middle tibia. Remainder of hind leg dark brown except for lighter color of tarsi and median 0.4 of tibia. Metasoma fuscous except for brownish red extreme apex of T2. *Length*: 6.2 mm (6.1 mm); wing 3.9 mm (3.9 mm); ovipositor 3.5 mm (3.4 mm).

**TYPE MATERIAL.** Female holotype [HMTc], *UNITED STATES*—*Colorado*: Boulder Co., Lyons, 14 June 1948, H., M., G., & D. Townes. Paratype female [HMTc], same data as for holotype.

**ETYMOLOGY.** From the Latin *pullatus*, clothed in dark garments, in reference to the overall dark coloration.

***Venturia pumila*, new species**  
(figs. 13e, 15j, 19c-d, 22l)

**DIAGNOSIS.** Similar to other small species with roundish heads, parallel inner ventral margins of the compound eyes, and sparsely punctate pronotal upper corners; it can be distinguished by the lack of rugae on the lateral area of the pronotum, lack of an areolet, strongly constricted juncture of the areola-petiolar area, dark brown metasoma with the lower lateral 0.5 of T4-7 brownish red, and small size (4.3 mm).

**FEMALE. Structure:** 1. Malar space about 0.3 as long as basal mandibular width. 2. (Antennae incomplete). 3. Frontal and dorsal outlines of head as in fig. 19c-d; OOD about 0.7. 4. Genal width about 0.3. 5. Mesosomal profile as in fig. 22l; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with epomia absent; lateral area with rugae absent except on posterior edge of lower corner, surface smooth and impunctate; upper corner with sparse punctures on weakly granulate surface; collar smooth. 7. Mesopleurum

with punctures in central region immediately below hypopleuron about 0.1  $\text{OD}$ , separated by 0.5-1.0 their diameter, on strongly granulate surface; scrobal groove with strong rugae from subalar ridge at least halfway to scrobe (area destroyed by being transversely mounted on minuten pin); hypopleuron with punctures absent on dorsal and posterior surfaces. 8. Propodeum with areola elongate; juncture of areola-petiolar area strongly constricted (fig. 15j); areola with fine rugae and several large punctures on weakly granulate surface, petiolar area reticulostriate; first lateral area with shallow regular punctures on granulate surface, second lateral area weakly rugosopunctate on granulate surface; propodeal neck about 0.6 as long as wide. 9. Hind femur about 4.3 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet absent. 11. FMS with petiole about 1.7 as long as postpetiole, postpetiole depressed (fig. 13e). 12. T2 about 1.8 as long as apical width; metasoma moderately compressed. 13. Ovipositor about 2.5 as long as hind femur, straight. *Color*: Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, scape and pedicel ventrally, tegula, fore and middle coxae except for dark brown of extreme base, apex of hind coxa, trochanters, and dorsal basal spot of hind tibia. Fore and middle legs otherwise brownish red. Hind leg with femur brownish red except for brown of apical 0.2; tibia and tarsi brown except for brownish yellow median 0.4 of tibia. FMS fuscous except for brownish red apical 0.3 of postpetiole. Apical 0.2 of T2, whitish yellow; ventral 0.5 of lateral areas of T4-6, brownish red; remainder of metasoma dark brown-fuscous. *Length*: 4.3 mm; wing 2.3 mm; ovipositor 2.0 mm.

**TYPE MATERIAL.** Female holotype [CASC, type no. 15692], *MEXICO*—*Nayarit*: Acaponeta, 4 May 1953, R.C. Bechtel.

**ETYMOLOGY.** From the Latin *pumilus*, dwarfish or diminutive, in reference to the very small size.

***Venturia punctata*, new species**  
(figs. 3q, 13x, 16j, 21o, 24i, 28i)

**DIAGNOSIS.** Readily distinguished by the densely punctate or rugosopunctate pronotal upper corner, wide (0.5) gena, elongate mesosoma (fig. 24i), fuscous fore and middle coxae, brown first hind trochanter, brownish red hind femur, loss of most propodeal carinae, uniformly punctate propodeal surface, and brownish red T4-7.



**FEMALE. Structure:** 1. Malar space about 0.5 as long as basal mandibular width. 2. Antenna with 50 flagellomeres. 3. Frontal outline of head similar to fig. 20o, dorsal outline as in fig. 21o. OOD about 1.0. 5. Genal width about 0.5. 5. Mesosomal profile as in fig. 24i; mesonotal profile strongly produced; subalar ridge punctate. 6. Pronotum with epomia absent; lateral area with rugae weak or absent except for strong rugae in lower corner, centrally smooth with scattered punctures; upper corner densely punctate or rugosopunctate, punctures separated by 0.3-0.5 their diameter. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by 0.3-0.5 their diameter on moderately granulate surface; scrobal groove with weak rugae from subalar ridge halfway to scrobe; scrobe present only as depressed area, not distinct pit; hypopimeron with close punctures on dorsal and posterior margins. 8. Propodeum with carinae weak, only basal transverse, pleural, and parts of apical transverse carinae present (fig. 16j); surface covered with punctures on weakly granulate surface, punctures separated by about 0.5 their diameter to contiguous; propodeal neck about 0.5 as long as wide. 9. Hind femur about 5.5 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.2 as long as cell (fig. 3q). 11. FMS with petiole about 1.7 as long as postpetiole and with two faint dorsolateral grooves, postpetiole depressed (fig. 13x). 12. T2 about 1.9 as long as apical width; metasoma moderately compressed. 13. Ovipositor about 2.6 as long as hind femur, straight except for weakly upcurved tip. **Color:** Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, and tegula. Palpi brownish yellow. Coxae dark brown-fuscous, except for brownish yellow of extreme apices. Trochanters brownish yellow, except for dark brown first hind trochanter, and irregular brownish areas of second hind trochanter. Fore and middle legs otherwise light brownish red. Hind femur brownish red, base and apex brownish; hind tibia and tarsi dark brown, median 0.5 of tibia lighter. FMS with petiole black, postpetiole piceous. T2 except for apical 0.1, and basal 0.3 of T3, fuscous; metasoma otherwise brownish red. **Length:** 8.4 mm (8.6 mm); wing 5.2 mm (5.3 mm); ovipositor 3.6 mm (3.7 mm).

**MALE. Structure:** Similar to female, antennae incomplete but with minimum of 44 flagellomeres; S9 as in fig. 28i (gonoforceps absent). **Color:** Similar to female except T2 completely fuscous; basal 0.5 of T5 brown, T6-7 fuscous

(these possibly due to postmortem changes). **Length:** 8.4 mm; wing 5.8 mm.

**TYPE MATERIAL.** Female holotype [CASC, type no. 15703], *MEXICO*—Zacatecas: Laguna Balderama, 25 mi. W. Fresnillo, 7900 ft., 23 June 1954, R.H. Brewer. Paratypes, 1F and 1M [CASC], same data as for holotype.

**ETYMOLOGY.** From the Latin *puncta*, puncture, in reference to the punctate propodeal surface.

*Venturia scitula*, new species

(figs. 1d, 11, 13p, 16d, 20u-v, 23g, 27a-d)

**DIAGNOSIS.** This species can be distinguished from others in the Hadra Group by the mesopleural punctures being separated by 0.3-0.5 their diameter on a smooth surface, sharply basally produced and somewhat elongate areola, smooth areolar surface with transverse rugae, fuscous-dark brown coloration of the hind leg, and the fuscous metasoma.

**FEMALE. Structure:** 1. Malar space about 0.5 as long as basal mandibular width. 2. Antenna with 34-37 flagellomeres. 3. Frontal and dorsal outlines of head as in fig. 20u-v; OOD about 0.7. 4. Genal width about 0.4. 5. Mesosomal profile as in fig. 23g; mesonotal profile somewhat produced; subalar ridge punctate. 6. Pronotum with strong epomia; lateral area with strong rugae, surface granulate; upper corner with punctures separated by 0.3-0.5 their diameter on smooth surface. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by 0.3-0.5 their diameter on smooth (or occas. weakly granulate) surface; scrobal groove with rugae extending halfway to scrobe, absent adjacent to subalar ridge; hypopimeron with close punctures on dorsal and posterior margins. 8. Propodeum with areola somewhat elongate and distant from basal propodeal margin, areola-petiole area juncture weakly constricted (fig. 16d); areola with weak rugulae on smooth surface, petiole area with fine transverse rugae on smooth surface with coarse punctures; first lateral area with regular punctation on weakly granulate surface, second lateral area with confluent punctures on smooth surface; propodeal neck broad, about 0.3 as long as wide. 9. Hind femur about 5.4 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.3 as long as cell. 11. FMS with petiole about 1.6 as long as postpetiole (fig. 13p). 12. T2 about 1.5 as long as apical width; metasoma weakly compressed. 13. Ovipositor 2.7-3.1 as long as hind femur, almost straight. **Color:** Head and mesosoma black,

the following whitish yellow: mandible except for dark brown of base and apex, palpi, tegula, and dorsal surface of fore tibia. Scape ventrally brownish yellow. Fore and middle legs brownish red except for dark brown of basal 0.8 of coxae, and ventral and posterior faces of trochanters. Hind leg with coxae fuscous, trochanters dark brown; femur except for base and apex, and median 0.5 of tibia, deep brownish red; remainder of leg brown. Metasoma fuscous, T3-8 with apices and highlights on lateral areas deep brownish red. *Length*: 6.8-10.8 mm (8.8 mm); wing 4.2-6.3 mm (5.5 mm); ovipositor 3.7-5.7 mm (4.6 mm).

**MALE.** *Structure*: Similar to female, except antenna with 35-37 flagellomeres; gena more flattened; propodeum with central area narrower and carinae higher and stronger; postpetiole depressed; right gonotorceps and S9 as in figs. 27a-d. *Color*: As in female. *Length*: 7.2-10 mm; wing 4.4-5.5 mm.

**TYPE MATERIAL.** Female holotype [HMTc], *UNITED STATES—California*: Mariposa Co, Yosemite Nat. Park, Crane Flat, 25 July 1948, H., M., G., D. and J. Townes. Paratypes, *CANADA—Manitoba*: 1F [CNCI], Morris, 20 Aug. 1924, A.V. Michener; 1F [CNCI], Treesbank (?), 11 Aug. 1924, R.D. Bird; *UNITED STATES—California*: 2FF and 15MM [HMTc], 1F and 3MM [DBWC],

same data as for holotype; 1F [HMTc], Nevada Co., Sagehen Creek, 10 July 1974, R.M. Bohart; *Florida*: 1F [USNM], Nassau Co., Fernandina, 16 March; *Idaho*: 1F [USNM], Custer Co., nr. Stanley, 8 Aug. 1978, H. & M. Townes; *Kansas*: 1F [USNM], Riley Co., Sept., "158", F. Marlatt; *Massachusetts*: 1F [MCZC], Duke Co., Martha's Vineyard, 26 June 1930, C.W. Johnson; *Michigan*: 1F [HMTc], Gladwin Co., 29 May 1939, R.R. Dreisbach; 1F [HMTc], Lake Co., 10 Aug. 1941, R.R. Dreisbach; 1M [HMTc], Newaygo Co., 31 July 1943, R.R. Dreisbach; 1F [MSUC], Tuscola Co., 20 July 1944, R.R. Dreisbach; *North Carolina*: 1F [UCDC], Currituck Co., Moyock, 8 May 1953, G.H. Nelson; *Ohio*: 1F [HMTc], Jackson Co., 5 Sept. 1941, J.E. Gillasp; *Oregon*: 1F [USNM], Coos Co., Coos Bay, 19 June 1926, H.A. Scullen; 1F [HMTc], Crook Co., Ochoco Creek, 11 July 1978, H. & M. Townes; 1F [HMTc], Hood River Co., Mt. Hood, 5400 ft., 24 July 1978, H. & M. Townes; 1F and 1M [HMTc], 1F [DBWC], Hood River Co., Parkdale, 18 July 1978 and 20 July 1978, H. & M. Townes; *South Dakota*: 1M [USNM], Orman Dam [?], 19 July 1924.

**OTHER SPECIMENS.** *UNITED STATES—Arizona*: 1F and 12MM [HMTc], Gila Co., nr. Roosevelt Lake, 21 April 1947, 22 April 1947, 23 April 1947, H. & M. Townes.



FIGURE 11. Localities of *Venturia scitula* Wahl.

COMMENT. In specimens from the western United States, the pronotal rugae tend to be either weak or absent from the median area which is then smooth or weakly granulate. The series of specimens from Arizona is provisionally included in this species, although they differ in the following: 1) females have the gena narrower (0.3), 2) females have the central area narrower and the carinae weaker, 3) males have the central area wider and the propodeal carinae weaker, and 4) the setae on the gonoforceps and S9 are sparser (compare figs. 27c-d, from an Arizona specimen, to figs. 27a-b, from a specimen from California). Figure 11 shows the distribution of this species.

ETYMOLOGY. From the Latin *scitulus*, handsome or elegant, in reference to the polished and strongly punctate mesosoma.

*Venturia sculleni*, new species

(figs. 13w, 17c, 20w-x, 23k, 27e-f)

DIAGNOSIS. Distinguishable by the rugosopunctate pronotal upper corner, yellow fore and middle coxae, yellow trochanters, lack of a distinct scrobe, lack of transverse rugae on the mesopleural suture, weak carinae of the apical 0.5 of the propodeum, light brownish red hind leg, depressed postpetiole, and brownish red T4-7.

FEMALE. *Structure*: 1. Malar space about 0.4 as long as basal mandibular width. 2. Antenna with 30-32 flagellomeres. 3. Frontal and dorsal outlines of head as in fig. 20w-x; OOD about 0.7. 4. Genal width about 0.3. 5. Mesosomal profile as in fig. 23k; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with strong epomia; lateral area with strong rugae on smooth surface; upper corner with punctures separated by 0.3-0.5 their diameter. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by 0.3-0.5 their diameter, on moderately granulate surface; scrobal groove with weak and irregular rugae, extending from subalar ridge halfway to scrobe; hypopimeron with close, well-defined punctures on dorsal and posterior margins. 8. Propodeum with areola elongate, juncture of areola-petiole area strongly constricted (fig. 17c); carinae other than basal transverse carina weak or obsolescent; areolar surface strongly granulate, petiole area finely reticulate on granulate surface; first lateral area with scattered punctures on granulate surface, second lateral area rugosopunctate on granulate surface; propodeal neck about 0.5 as long as wide.

9. Hind femur about 5.9 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.3 as long as cell. 11. FMS with petiole about 1.7 as long as postpetiole, postpetiole depressed (fig. 13w). 12. T2 about 1.7 as long as apical width; metasoma moderately compressed. 13. Ovipositor 2.6-3.0 as long as hind femur, moderately curved. *Color*: Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, ventral surfaces of scape and pedicel, tegula, fore and middle coxae except for extreme bases, extreme apex of hind coxa, trochanters, dorsal surface of front tibia, and dorsal spot on base of hind tibia. Coxae otherwise brown to fuscous. Remainder of fore and middle legs brownish red. Remainder of hind leg brownish red, except for dark brown of base and apex of tibia, and tarsus. Petiole with basal 0.8 to entirely, and basal 0.5 of T2, fuscous; remainder of metasoma brownish red. *Length*: 6.5-7.2 mm (6.5 mm); wing 3.6-4.3 mm (3.7 mm); ovipositor 3.1-3.7 mm (3.2 mm).

MALE. *Structure*: Similar to female, except genital width about 0.4; propodeal carinae somewhat stronger than in female; right gonoforceps and S9 as in figs. 27e-f. *Color*: Similar to female, available specimens showing either: a) basal 0.8 of T2, T3, T5-6 except for median transverse bands, T7 and gonoforceps, dark brown to fuscous; b) similar to above but basal dark bands on T5-6 reduced, and T7 with only midline dark brown. *Length*: 5.9 mm; wing 3.4-3.6 mm.

TYPE MATERIAL. Female holotype [HMTc], UNITED STATES—Arizona: Cochise Co., 23 mi. NE Douglas, 31 July 1946, H.A. Scullen. Paratypes, MEXICO—Chihuahua: 1F [SEMC], Naica, 21 July 1938, L.J. Lipovsky; UNITED STATES—Arizona: 1F [USNM], Pima Co., Continental, 2-4 Aug. 1959, K.V. Krombein; New Mexico: 1F [LACM], Dona Ana Co., Pyramid Peak, 2 Aug. 1930, "9715", F.R. Fosberg; 1F and 1M [HMTc], 1M [OSUO], 1F [DBWC], Grant Co., 15 mi. E. Lordsburg, 4500 ft., 31 July 1946 and 1 Aug. 1943, H.A. Scullen.

COMMENT. One female has the rugae of the lateral area of the propodeum reduced or obsolescent, as in males.

ETYMOLOGY. This species is named for the late H.A. Scullen, the collector of the type specimen.

*Venturia sokanakiakorum* (Viereck)

(figs. 1f, 2a, 3a, 12, 13v, 18c, 21u, 24l, 28g-h)

*Casinaria* (*Idrechthis*) *sokanakiakorum* Viereck, 1917



(1916). Connecticut State Geol. Nat. Hist. Survey Bull. 22: 270. Male (USNM).

**DIAGNOSIS.** This species can be distinguished from others in the *Nigriscapus* Group by the interception of the postnervulus at the midlength, nervulus opposite the basal vein, punctate metapleurum, elongate and narrow areola, and moderately compressed metasoma.

**FEMALE. Structure:** 1. Malar space about 0.4 as long as basal mandibular width. 2. Antenna with 35-38 flagellomeres. 3. Frontal outline of head similar to fig. 20k, dorsal outline as in fig. 21u; OOD about 1.0. 4. Genal width about 0.4. 5. Mesosomal profile as in fig. 24l; mesonotal profile not produced; subalar ridge weakly rugosopunctate. 6. Pronotum with strong epomia; lateral area with rugae strong and extending to lower corner, on smooth surface; upper corner rugosopunctate, punctures separated by about 0.3 their diameter. 7. Mesopleurum with punctures in central region immediately below hypoepimeron about 0.1 OD, separated by 0.3-0.5 their diameter, on moderately granulate surface; scrobal groove with strong rugae extending from subalar ridge to scrobe; hypoepimeron with close punctures on dorsal and upper 0.5 of posterior margins. 8. Propodeum with areola elongate and narrow, juncture of areola-petiole areas moderately constricted (fig. 18c); areola with transverse rugae on smooth surface, petiole area reticulate; first lateral area with shallow punctures on granulate surface, second lateral area rugosopunctate; propodeal neck about 0.7 as long as wide. 9. Hind femur about 5.0 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.6 as long as cell. 11. FMS with petiole about 1.8 as long as postpetiole, postpetiole high (fig. 13v). 12. T2 about 2.2 as long as apical width; metasoma moderately compressed. 13. Ovipositor 1.3-1.4 as long as hind femur, straight. **Color:** Head and mesosoma black, the following whitish yellow: mandible except for dark brown of base and apex, ventral surface of scape and pedicel, palpi, tegula, fore and middle coxae except for dark brown of extreme base, trochanters, dorsal surfaces of fore and middle tibiae, and extreme base of hind tibia. Remainder of legs brownish red except for dark brown of extreme apex of hind femur, sub-basal and apical bands of hind tibia, and hind tarsi. FMS black except for light brownish red of apical 0.3-0.5 of postpetiole. T2 except for apical 0.3, basal 0.4 of T3, fuscous; remainder of metasoma brownish red. **Length:** 6.0-8.7 mm; wing 3.5-4.8 mm; ovipositor 1.8-2.4 mm.

**MALE. Structure:** Similar to female, except antenna with 36-39 flagellomeres; genal width about 0.5; rugae of scrobal groove usually weak or absent near scrobe; areolet stalk about 0.4 as long as cell; propodeum with central area slightly narrower, carinae stronger and higher; right gonoforceps and S9 as in figs. 28g-h. **Color:** Similar to female, fore and middle coxae pale yellow except for dark brown of extreme base of fore coxa and basal 0.3-0.5 of middle coxa; hind femur with base and apex dark brown; FMS black except for extreme apex of postpetiole; T2 except for brownish white of apical 0.2, basal 0.5 and midline of T3, midlines and upper lateral areas of T5-6, T7, and gonoforceps, fuscous; remainder of metasoma brownish red. **Length:** 7.0-8.0 mm; wing 3.7-4.9 mm.

**SPECIMENS EXAMINED.** 131 females, 243 males.

**TYPE MATERIAL.** Male holotype [USNM, CAES no. 127], *UNITED STATES—Connecticut:* New Haven Co., New Haven, 4 July 1905, H.L. Viereck.

**DISTRIBUTION.** Fig. 12; found throughout eastern Canada and the eastern United States to about 100° W. Isolated localities are in Saskatchewan (Waskesin Lake) and Idaho (Collins). One specimen was collected in Mexico (*Nayarit:* Arroyo Refelion, nr. Compostela, 8 Aug. 1965, H.E. Evans); Carlson (1979) states that he has examined a specimen of this species from Guatemala.

**COMMENT.** Several color forms are seen in this species. Male specimens from Canada and from some localities in Michigan, New York, and Ohio can have the mandible, apical 0.5 of the fore coxa, most or all of the second coxa, and the hind tibia, dark brown to fuscous. Females, while exhibiting infuscation of the coxae, generally do not show the other color states. Females from the Gulf Lake Biological Station, Kalamazoo, Michigan, exhibit the extremes of color. Specimens from McAllen, Texas, differ in that the females have the midlines of T3-7 fuscous. In addition, males can have T4-7 almost completely dark brown or fuscous except for narrow brownish red apices.

Most dates of collection are from late May to mid-September. Specimens from McAllen, Texas, have been collected from September through May.

*Venturia spectabilis*, new species  
(figs. 13n, 15f, 19e-f, 22b)

**DIAGNOSIS.** Distinguished from other small species with roundish heads, parallel inner ventral margins of the compound eyes, and

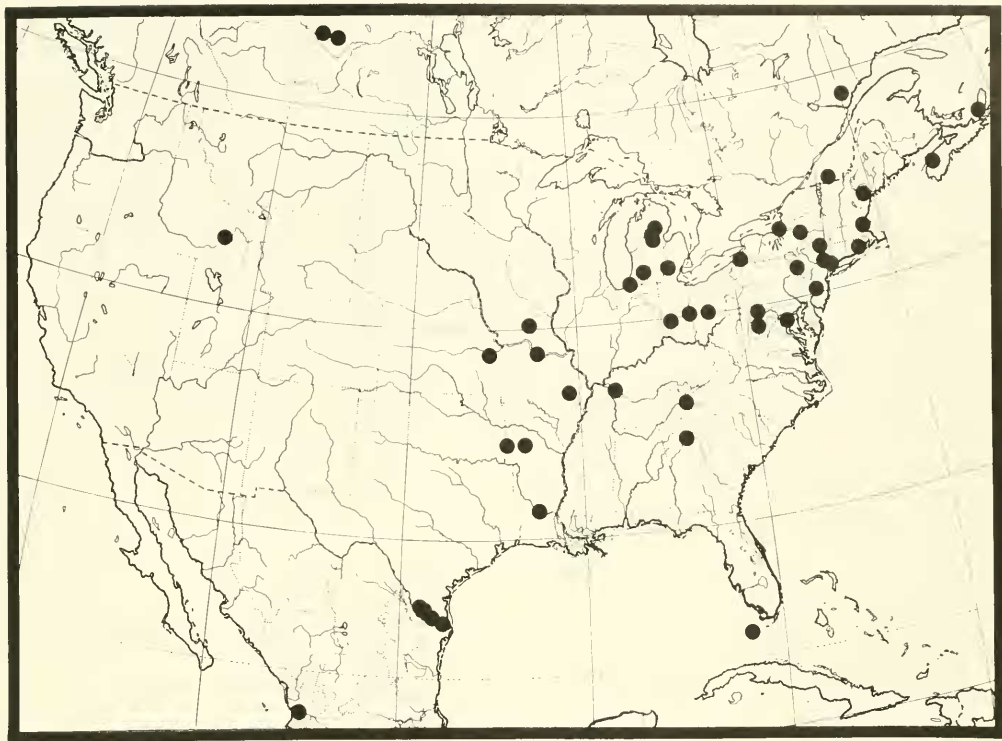


FIGURE 12. Localities of *Venturia sokanakiakorum* (Vier.).

sparsely punctate pronotal upper corners by the somewhat elongate areola adjacent to the basal propodeal margin, dark brown hind femur, fuscous coxae and metasoma, and long (3.6-3.7 as long as the hind femur) and straight ovipositor.

**FEMALE. Structure:** 1. Malar space about 0.4 as long as basal mandibular width. 2. Antenna with 28 flagellomeres. 3. Frontal and dorsal outlines of head as in fig. 19e-f; OOD about 0.9. 4. Genal width about 0.4. 5. Mesosomal profile as in fig. 22b; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with epomia weak; lateral area with weak rugae, on smooth surface; upper corner with sparse punctures on strongly granulate surface. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by about their diameter, on strongly granulate surface; hypopimeral groove with strong rugae from subalar ridge to near scrobe; hypopimeron with punctures absent on dorsal and posterior margins. 8. Propodeum with areola somewhat elongate, juncture of areola-petiolar area strongly constricted (fig. 15f); areolar surface strongly granulate, petiolar area with weak transverse rugae

on granulate surface; first and second lateral areas with sparse weak punctures on strongly granulate surface; propodeal neck about 0.7 as long as wide. 9. Hind femur about 5.1 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.4 as long as cell. 11. FMS with petiole about 1.5 as long as postpetiole (fig. 13n). 12. T2 about 2.0 as long as apical width; metasoma moderately compressed. 13. Ovipositor 3.6-3.7 as long as hind femur, almost straight. **Color:** Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, scape ventrally, extreme apices of coxae, trochanters except for brown first hind trochanter, and dorsal basal spot of hind tibia. Coxae otherwise fuscous. Remainder of fore and middle legs brownish red. Remainder of hind leg dark brown except for lighter median 0.4 of tibia. Metasoma dark brown-fuscous except for brownish red apicolateral corners of T2. **Length:** 4.4-5.0 mm (4.5 mm); wing 3.0-3.1 mm (2.9 mm); ovipositor 3.5-3.6 mm (3.6 mm).

**TYPE MATERIAL.** Female holotype [MCZC], UNITED STATES—North Carolina: Buncombe Co., Black Mountain City, 2700 ft.,

22 Aug. 1930, N. Banks. Paratype, 1F [CEDC], UNITED STATES—Ohio: Jefferson Co., 8 Aug. 1967, C. Dasch).

OTHER SPECIMENS. UNITED STATES—New York: 1F [FSCA], Westchester Co., Armonk, Calder Center, 12-18 Aug. 1974, "Malaise trap", C. Calmbacher.

ETYMOLOGY. From the Latin *spectabilis*, notable or showy, in reference to the unusually long ovipositor.

***Venturia taneces*, new species**

(figs. 4c, 14e, 16l, 21t, 23j)

DIAGNOSIS. Distinguishable from other species with a completely fuscous metasoma by the rugosopunctate pronotal upper corner, predominately dark brown coxae, fuscous first hind trochanter and hind femur, short areola with the surface granulate, and the nearly straight ovipositor with an elongate and upcurved tip.

FEMALE. *Structure*: 1. Malar space about 0.4 as long as basal mandibular width. 2. Antenna with 31-34 flagellomeres. 3. Frontal outline of head similar to fig. 20o, dorsal outline as in fig. 21t; OOD about 0.7. 4. Genal width about 0.4. 5. Mesosomal profile as in fig. 23j; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Pronotum with strong epomia; lateral area with strong rugae except where obsolescent adjacent to front edge, on smooth surface; upper corner rugosopunctate, punctures separated by about 0.3 their diameter. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by 1.0-1.5 their diameter, on smooth to weakly granulate surface; scrobal groove with strong rugae from subalar ridge halfway to scrobe; hypopimeron with close punctures on dorsal and posterior margins. 8. Propodeum with areola about as long as wide, juncture of areola-petiolar area moderately constricted (fig. 16l); areola with weak rugae on granulate surface, petiolar area with strong transverse rugae; first lateral area with regular punctation on granulate surface, second lateral area rugosopunctate on granulate surface; propodeal neck about 0.5 as long as wide. 9. Hind femur about 5.0 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.5 as long as cell. 11. FMS with petiole about 1.6 as long as postpetiole (fig. 14e). 12. T2 about 2.1 as long as apical width; metasoma moderately compressed. 13. Ovipositor about 3.0 as long as hind femur, nearly straight except for upcurved tip; apex elongate (fig. 4c). *Color*: Head and

mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, tegula, extreme apices of fore and middle coxae, fore and middle trochanters except for brownish tinges on ventral surfaces, dorsal surfaces of fore and middle tibiae, and basal spot on dorsal surface of hind tibia. Fore and middle legs otherwise brownish red, except for irregular brown areas on ventral surface of middle femur and tibia. Coxae (except as noted) and remainder of hind leg, fuscous except for more lightly colored area on median 0.5 of tibia, and brownish yellow coloration of first two tarsomeres. Metasoma black-fuscous, except for deep brownish red apical 0.2 of T2 and apices of T3-7. *Length*: 6.7-8.1 mm (7.3 mm); wing 4.1-4.4 mm (4.4 mm); ovipositor 3.8-4.6 mm (4.2 mm).

TYPE MATERIAL. Female holotype [HMTc], UNITED STATES—California: San Diego Co., Julian, 24 May 1974, H. & M. Townes. Paratypes, UNITED STATES—California: 1F [DBWC], Los Angeles Co., Newhall, 13 May 1941, R.M. Bohart; 1F [HMTc], Los Angeles Co., Westwood Hills, 25 April 1941, R.M. Bohart; 1F [UCDC], San Bernardino Co., Mountain Home, prob. Mountain Home Creek, 15 mi. S. Big Bear Lake near town of Forest Home—see Townes & Linna, 1963, 12 Sept. 1953; 2FF [HMTc], 1F [DBWC], San Diego Co., same data as for holotype except collected 25 May 1974 and 27 May 1974; 1F [HMTc], 1F [DBWC], San Diego Co., Lake Wohlford, 26 April 1974 and 30 April 1974, H. & M. Townes.

COMMENT. The metasoma can have the brownish red areas faint or absent; it can also be deep brown with the fuscous coloration of the hind leg accordingly lighter, second hind trochanter brownish yellow, and the dark markings of the middle femur and tibia absent. There is some variation in the degree of the apical curvature of the ovipositor.

ETYMOLOGY. From the Greek *taneces*, thin or elongate, in reference to the drawn-out apex of the ovipositor.

***Venturia texana*, new species**

(figs. 13i, 17j, 19u-v, 22i)

DIAGNOSIS. Distinguished from other species in the Gelechia Group by the yellow fore and middle coxae, light brownish red hind femur, elongate areola distant from the basal propodeal margin, fuscous metasoma, and the short (about 2.4 as long as the hind femur) and straight ovipositor.



**FEMALE. Structure:** 1. Malar space about 0.3 as long as basal mandibular width. 2. Antenna with 27 flagellomeres. 3. Frontal and dorsal outlines of head as in fig. 19u-v; eyes ventrally convergent; OOD about 0.9. 4. Genal width about 0.4. 5. Mesosomal profile as in fig. 22i; mesonotal profile strongly produced; subalar ridge weakly rugosopunctate. 6. Large portion of pronotum covered by glue; lateral area with rugae weak or absent in lower corner, on smooth surface; upper corner probably with sparse punctures on strongly granulate surface. 7. Mesopleurum with punctures in central region immediately below hypoepimeron about 0.1 OD, separated by about their diameter, on moderately granulate surface; scrobal groove with strong rugae from subalar ridge halfway to scrobe; hypoepimeron with punctures absent on dorsal and posterior margins. 8. Propodeum with areola elongate, juncture of areola-petiolar area moderately constricted (fig. 17j); areola with few weak rugae on granulate surface, petiolar area with fine transverse rugae on granulate surface; first lateral area with shallow regular punctation on granulate surface, second lateral area weakly rugosopunctate on granulate surface; propodeal neck about 0.5 as long as wide. 9. Hind femur about 5.4 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet petiolate, stalk about 0.4 as long as cell. 11. FMS with petiole about 1.5 as long as postpetiole (fig. 13i). 12. T2 about 2.2 as long as apical width; metasoma moderately compressed. 13. Ovipositor about 2.4 as long as hind femur, straight. **Color:** Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, scape and pedicel ventrally, tegula, trochanters except for yellowish brown first hind trochanter, dorsal surfaces of fore and middle tibiae, and dorsal basal spot of hind tibia. Fore and middle legs otherwise light brownish red except for brown of extreme bases of coxae. Hind coxa dark brown except for brownish yellow of apical 0.2. Hind femur brownish red except for brown tinge of apical 0.2; hind tibia and tarsi otherwise brown, except for brownish red of median dorsal 0.3 of tibia. FMS dark brown-fuscous except for brownish red of apex of postpetiole. Apical 0.2 of T2, and apical 0.3 of T6-7, light brownish red; remainder of metasoma dark brown. **Length:** 5.1 mm; wing 2.6 mm; ovipositor 2.3 mm.

**TYPE MATERIAL.** Female holotype [HMTc], *UNITED STATES—Texas:* Culbertson Co., McKittrick Canyon, 17 Aug. 1961, 5200 ft., F. & N. Gehlbach.

**ETYMOLOGY.** The specific name derives

from the state of Texas where the specimens were collected.

*Venturia tezcattlipocai* Wahl  
(fig. 18i)

*Venturia tezcattlipocai* Wahl, 1984. Contrib. American Entomol. Inst. 22: 26. Female (CASC).

Distinguishable from the other species of the *Nigriscapus* Group by the reddish yellow ventral surface of the scape, medially arched occipital carina, presence of an apparent hypoepimeral extension, yellow fore and middle coxae, smooth mesopleural surface, shape of the central area of the propodeum (fig. 18i), punctate scutellum and metapleurum, fuscous FMS with the apical 0.5 of the postpetiole brownish red, and the fuscous midlines of T4-7.

This species is found in Mexico (San Luis Potosi).

*Venturia townesorum* Wahl  
(fig. 18e)

*Venturia townesorum* Wahl, 1984. Contrib. American Entomol. Inst. 22: 14. Female (HMTc).

This species can be easily distinguished from the others in the *Nigriscapus* Group by the brown ventral surface of the scape, medially arched occipital carina, lack of an apparent hypoepimeral extension, fuscous fore and middle coxae, weakly granulate mesopleurum, weak carinae of the apical 0.5 of the propodeum (fig. 18e), coarsely rugosopunctate scutellum and metapleurum, and brownish red apex of the petiole and entire postpetiole. Although Mexican species of *V. nigriscapus* also have the fore and middle coxae fuscous, *townesorum* has the middle femur yellow and the postpetiole brownish red.

This species occurs in Mexico (San Luis Potosi and Veracruz) and Panama.

*Venturia tristis*, new species  
(figs. 14o, 17e, 20e-f, 24c)

**DIAGNOSIS.** Recognizable by the narrow (0.3) gena, rugosopunctate pronotal upper corner, weakly granulate mesopleurum with punctures separated by 0.3-0.5 their diameter, whitish yellow fore and middle coxae, brownish red hind femur, elongate and narrow areola near the basal propodeal margin, brownish red T4-7, and large size (9.3 mm).

FEMALE. *Structure*: 1. Malar space about 0.5 as long as basal mandibular width. 2. Antenna with 34 flagellomeres. 3. Frontal and dorsal outlines of head as in fig. 20e-f; OOD about 0.9. 4. Genal width about 0.3. 5. Mesosomal profile as in fig. 24c; mesonotal profile somewhat produced; subalar ridge punctate. 6. Pronotum with strong epomia; lateral area with strong rugae except where absent adjacent to front margin, on weakly granulate surface; band of punctuation parallel to front margin; upper corner rugosopunctate, punctures separated by about 0.3 their diameter or contiguous. 7. Mesopleurum with punctures in central region immediately below hypopimeron about 0.1 OD, separated by 0.3-0.5 their diameter, on weakly granulate surface; scrobal groove with strong rugae from subalar ridge to about 0.7 of distance to scrobe; hypopimeron with close punctures on dorsal and upper 0.5 of posterior margins. 8. Propodeum with areola elongate, juncture of areola-petiole area weakly constricted (fig. 17e); areola with weak rugae on granulosopunctate surface, petiole area distinctly concave and with strong transverse rugae; first lateral area with regular punctuation on granulate surface, second lateral area rugosopunctate on granulate surface; propodeal neck about 0.6 as long as wide. 9. Hind femur about 6.0 as long as wide; hind tibial spur about 0.5 as long as hind basitarsus. 10. Areolet subpetiolate, stalk about 0.1 as long as cell. 11. FMS with petiole about 1.6 as long as postpetiole (fig. 14o). 12. T2 about 3.0 as long as apical width; metasoma strongly compressed. 13. Ovipositor about 3.1 as long as hind femur, moderately curved. *Color*: Head and mesosoma black, the following whitish yellow: mandible except for brown of base and apex, palpi, scape and pedicel ventrally, tegula, fore and middle coxae except for dark brown of basal 0.3, extreme apex of hind coxa, trochanters, and dorsal basal spot of hind tibia. Fore and middle legs otherwise light brownish red. Hind femur brownish red; hind tibia and tarsi dark brown. FMS black; T2 and basal 0.3 of T3, fuscous; remainder of metasoma brownish red. *Length*: 9.3 mm; wing 5.1 mm; ovipositor 5.2 mm.

TYPE MATERIAL. Female holotype [USNM], MEXICO—*Nuevo Leon*: "Cadereyta" (presumably Cadereyta Jiménez), 17 April 1947, "Las-44184; 47-9641; on top manimoth cactus."

ETYMOLOGY. From the Latin *tristis*, sad, in reference to the paucity of specimens for this species.

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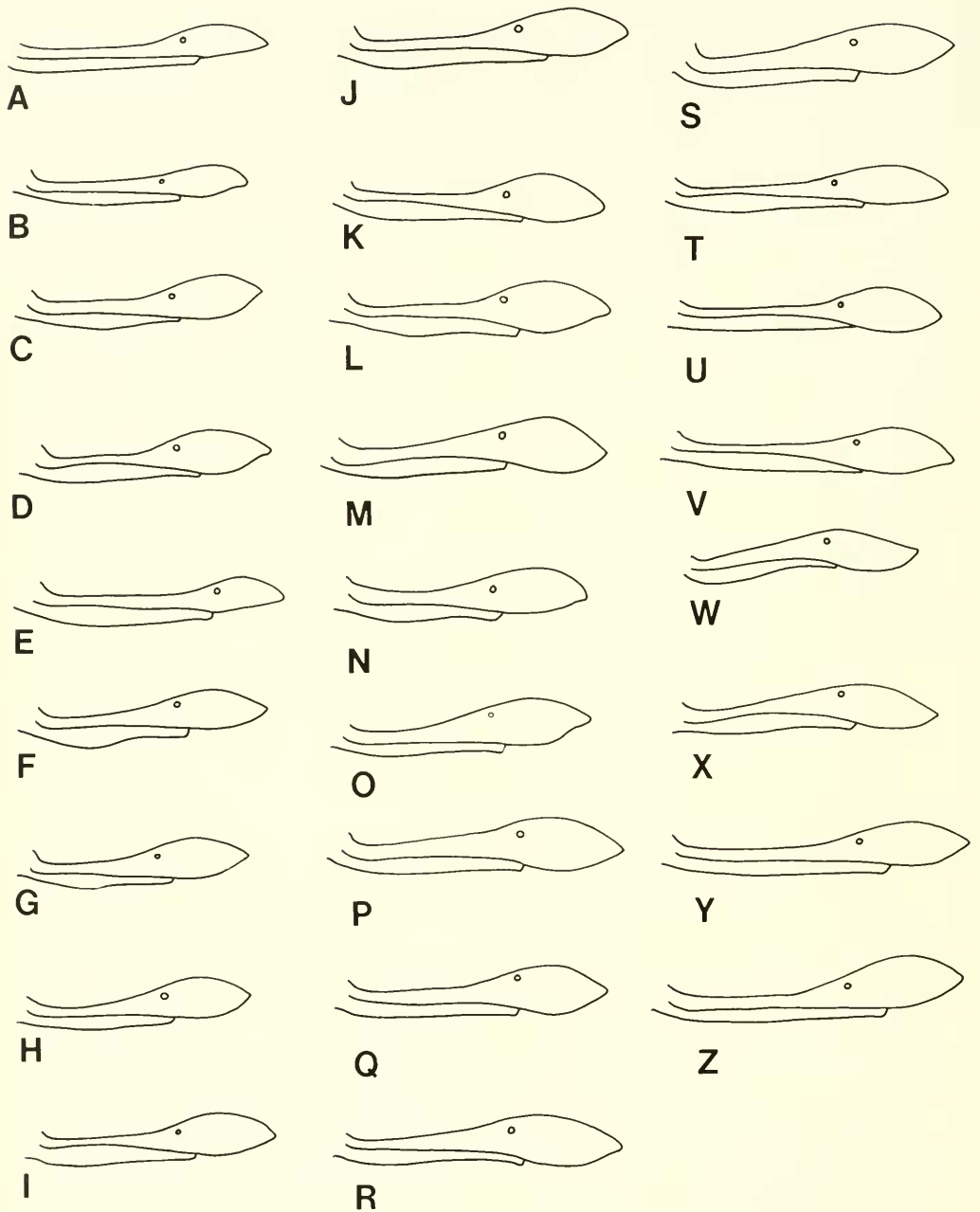


FIGURE 13. Lateral aspect of first metasomal segment. A. *Venturia leptogaster* (Cam.), B. *V. anareolata* Wahl, C. *V. gaesata* Wahl, D. *V. marjoriella* Wahl, E. *V. pumila* Wahl, F. *V. mulleola* Wahl, G. *V. amplareolata* Wahl, H. *V. australis* Wahl, I. *V. texana* Wahl, J. *V. pullata* Wahl, K. *V. chnaura* Wahl, L. *V. cremna* Wahl, M. *V. latrunculus* Wahl, N. *V. spectabilis* Wahl, O. *V. hadra* Wahl, P. *V. scitula* Wahl, Q. *V. brachypropodealis* Wahl, R. *V. erythrogaster* Wahl, S. *V. finlaysonae* Wahl, T. *V. compacta* Wahl, U. *V. anchisteus* Wahl, V. *V. sokanakiakorum* (Vier.), W. *V. sculleni* Wahl, X. *V. punctata* Wahl, Y. *V. daschi* Wahl, Z. *V. fuscifemorata* Wahl.

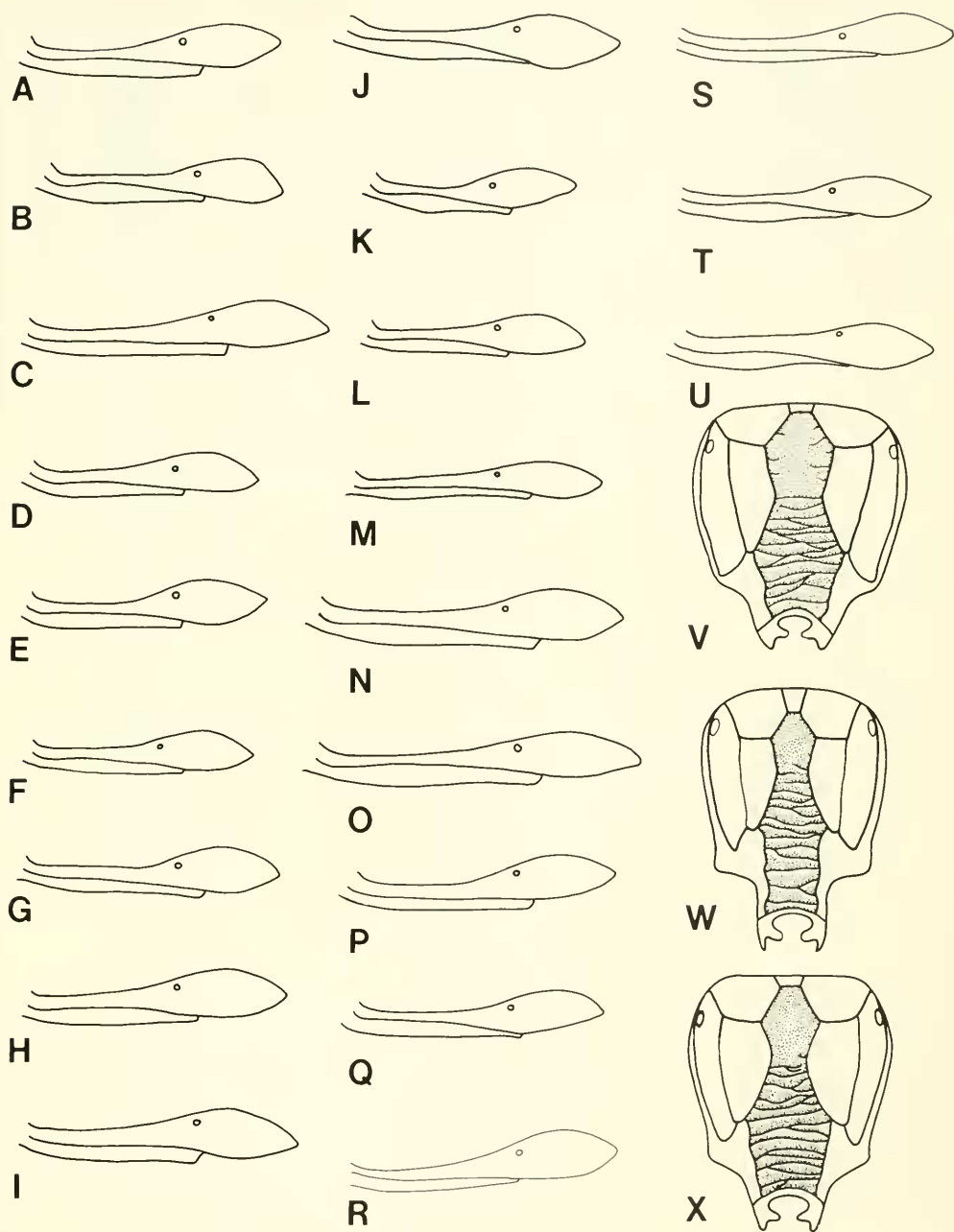


FIGURE 14. A-U, Lateral aspect of first metasomal segment. A. *Venturia nigricoxalis* (Cush.), B. *V. longicuspis* Wahl, C. *V. micheneri* Wahl, D. *V. dreisbachi* Wahl, E. *V. tanecus* Wahl, F. *V. capulata* Wahl, G. *V. micraulax* Wahl, H. *V. hibiscellae* Wahl, I. *V. platyura* Wahl, J. *V. portalensis* Wahl, K. *V. mayi* Wahl, L. *V. nickelseni* Wahl, M. *V. proluxa* Wahl, N. *V. erythropus* (Ash.), O. *V. tristis* Wahl, P. *V. canescens* (Grav.), Q. *V. gelechia* (Ash.), R. *V. licina* Wahl, S. *V. floridensis* Wahl, T. *V. masoni* Wahl, U. *V. durangensis* Wahl. V-X, Dorsal aspect of propodeum. V. *V. australis* Wahl, W. *V. mayi* Wahl, X. *V. pullata* Wahl.

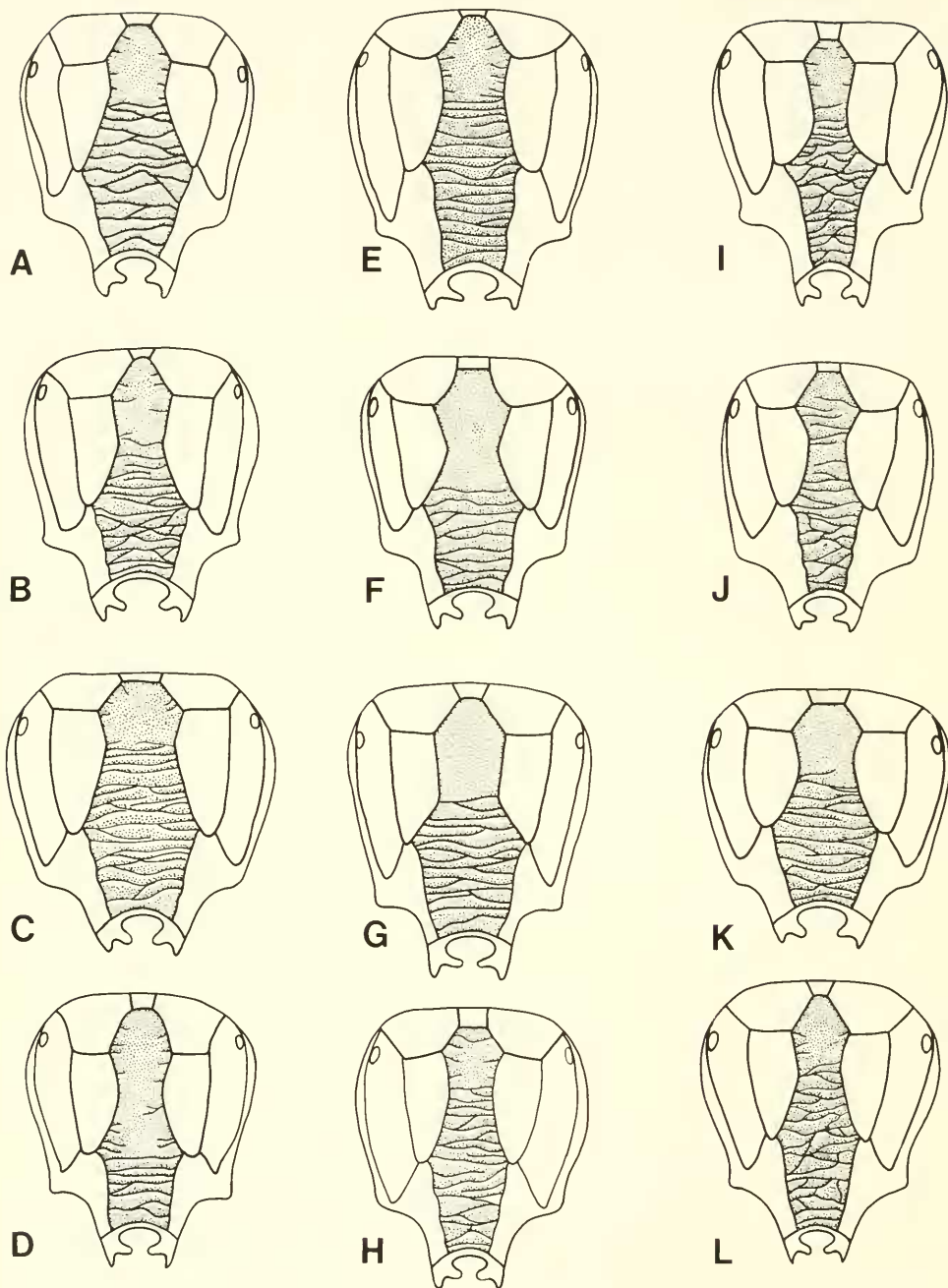


FIGURE 15. Dorsal aspect of propodeum. A. *Ventruria eremna* Wahl, B. *V. chnaura* Wahl, C. *V. gaesata* Wahl, D. *V. amplareolata* Wahl, E. *V. gelechia* (Ash.), F. *V. spectabilis* Wahl, G. *V. marjoriella* Wahl, H. *V. anareolata* Wahl, I. *V. leptogaster* (Cam.), J. *V. pumila* Wahl, K. *V. mulleola* Wahl, L. *V. capulata* Wahl.



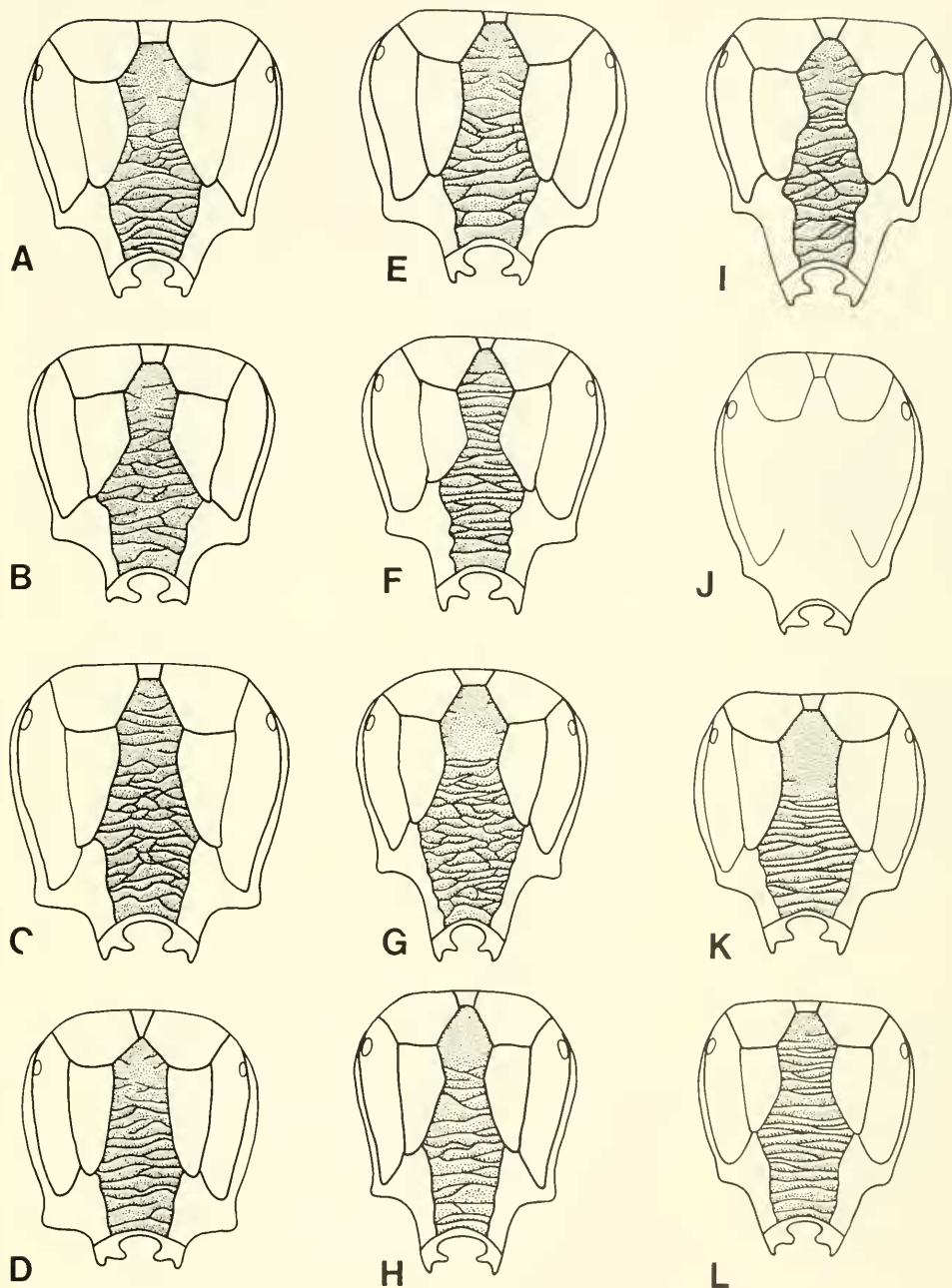


FIGURE 16. Dorsal aspect of propodeum. A. *Venturia finlaysonae* Wahl, B. *V. hadra* Wahl, C. *V. erythrogaster* Wahl, D. *V. scitula* Wahl, E. *V. brachypropodealis* Wahl, F. *V. portalensis* Wahl, G. *V. nickelsenii* Wahl, H. *V. dreisbachi* Wahl, I. *V. nigricoxalis* (Cush.), J. *V. punctata* Wahl, K. *V. latrunculus* Wahl, L. *V. tanecae* Wahl.

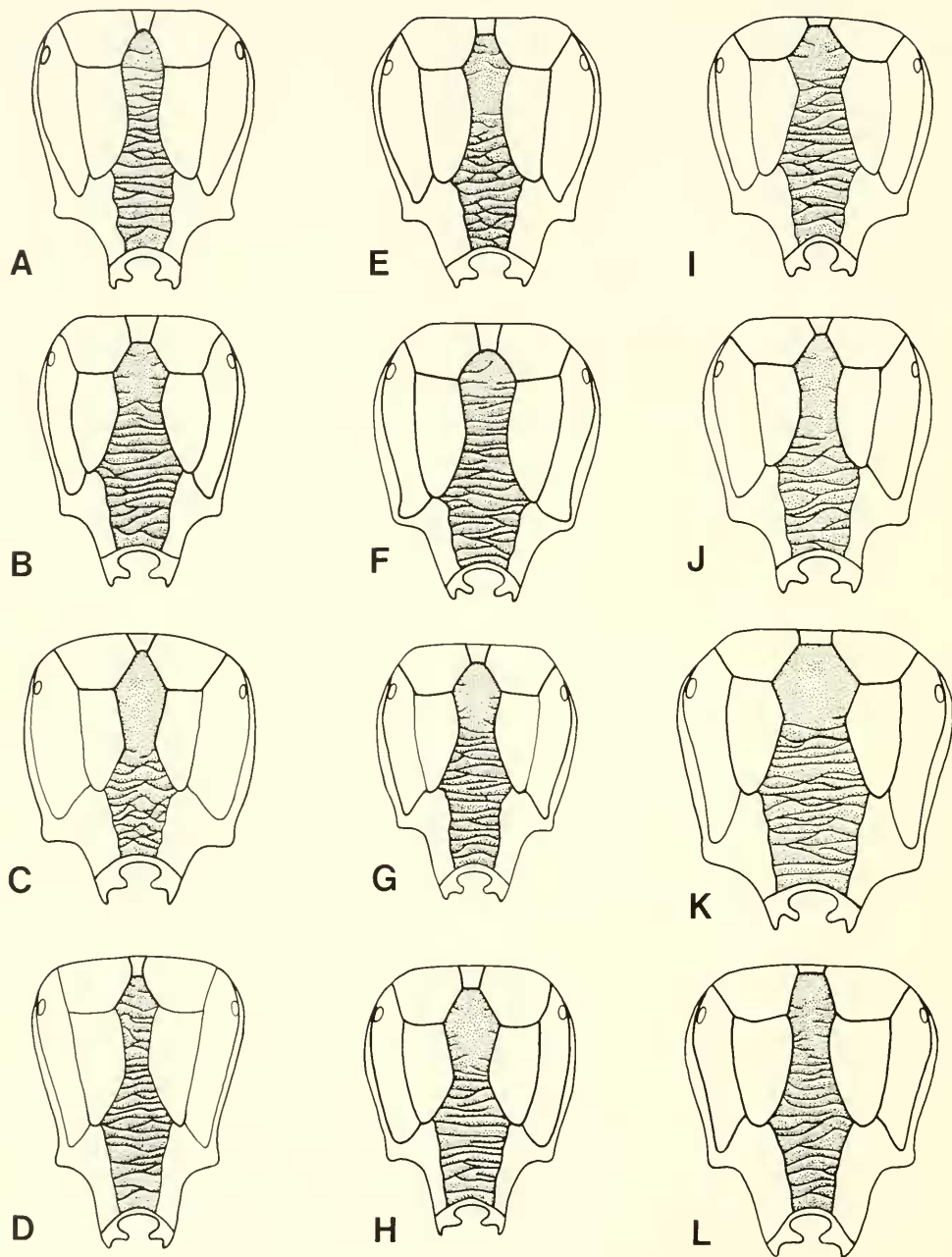


FIGURE 17. Dorsal aspect of propodeum. A. *Venturia canescens* (Grav.), B. *V. hibiscellae* Wahl, C. *V. sculleni* Wahl, D. *V. prolixa* Wahl, E. *V. tristis* Wahl, F. *V. erythropus* (Ash.), G. *V. micheneri* Wahl, H. *V. platyura* Wahl, I. *V. longicuspis* Wahl, J. *V. texana* Wahl, K. *V. micraulax* Wahl, L. *V. fuscifemorata* Wahl.

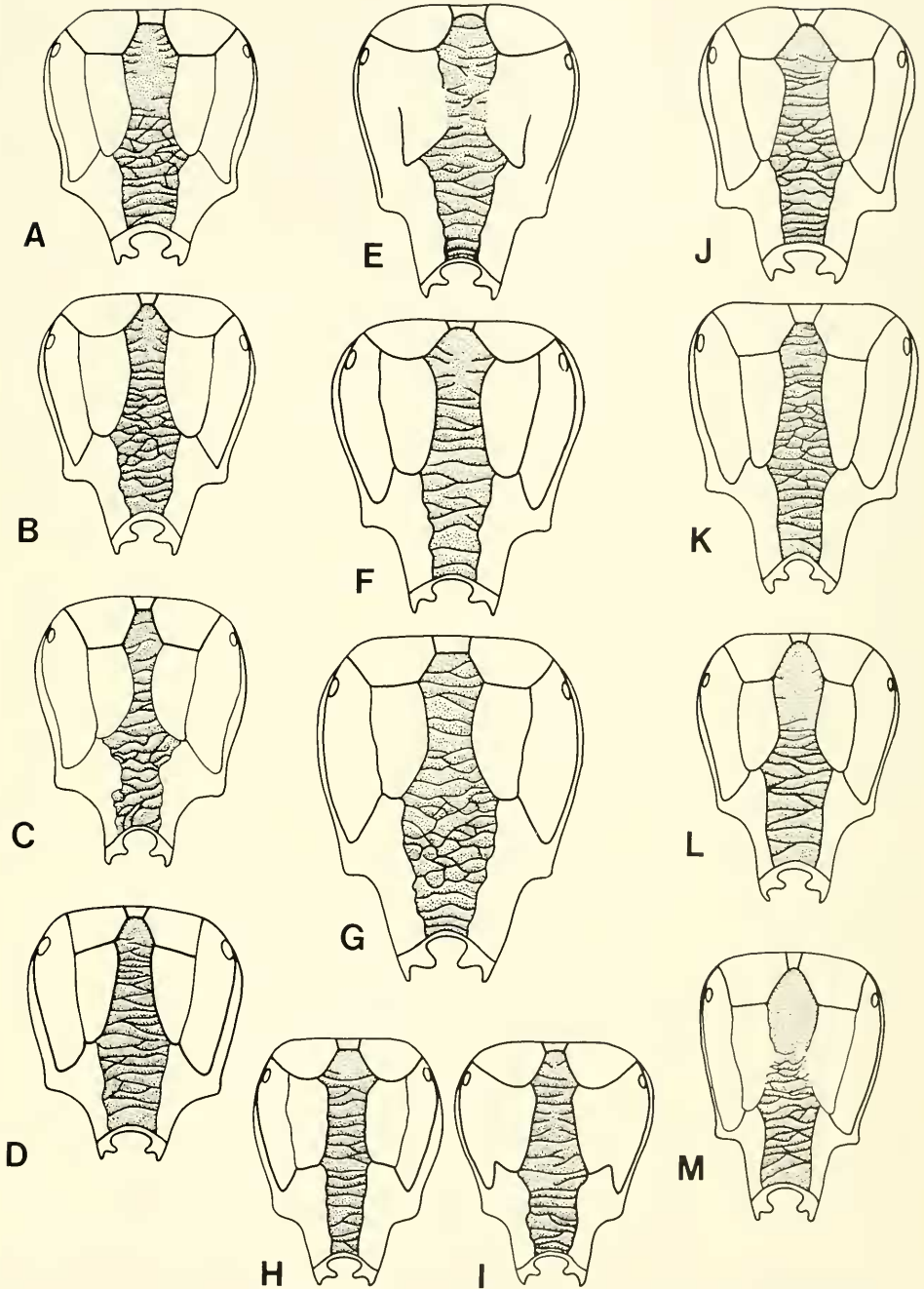


FIGURE 18. Dorsal aspect of propodeum. A. *Venturia daschi* Wahl, B. *V. compacta* Wahl, C. *V. sokanakiakorum* (Vier.), D. *V. anchisteus* Wahl, E. *V. townesorum* Wahl, F. *V. nigriscapus* (Vier.), G. *V. musae* Wahl, H. *V. macilenta* (Cr.), I. *V. tezcaltipocai* Wahl, J. *V. licina* Wahl, K. *V. floridensis* Wahl, L. *V. masoni* Wahl, M. *V. durangensis* Wahl.



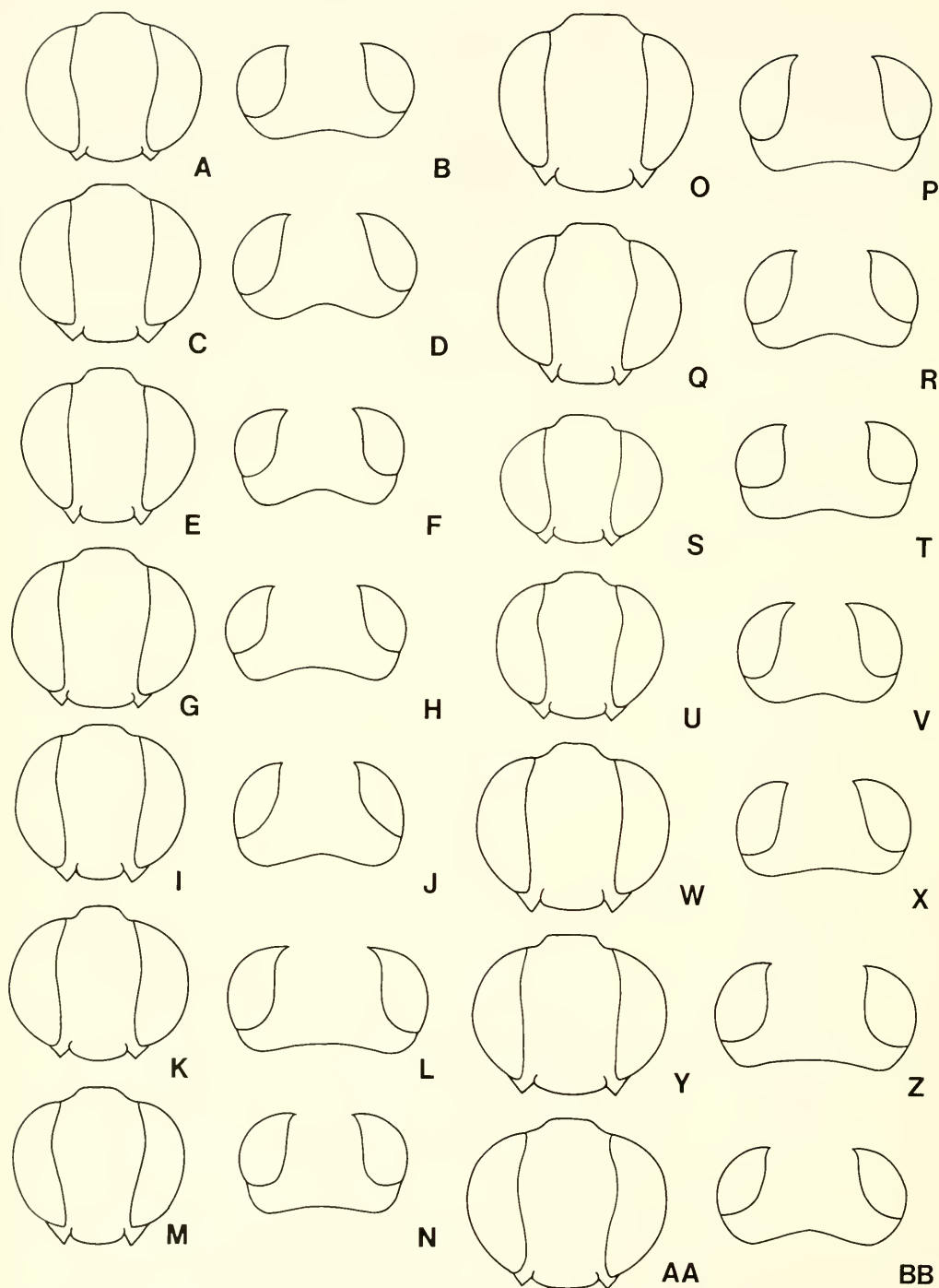


FIGURE 19. Frontal and dorsal aspects of head. A-B. *Venturia chnaura* Wahl, C-D. *V. pumila* Wahl, E-F. *V. spectabilis* Wahl, G-H. *V. pullata* Wahl, I-J. *V. australis* Wahl, K-L. *V. gaesata* Wahl, M-N. *V. mayi* Wahl, O-P. *V. leptogaster* (Cam.), Q-R. *V. anareolata* Wahl, S-T. *V. marjoriella* Wahl, U-V. *V. texana* Wahl, W-X. *V. eremna* Wahl, Y-Z. *V. mulleola* Wahl, AA-BB. *V. gelechia* (Ash.).

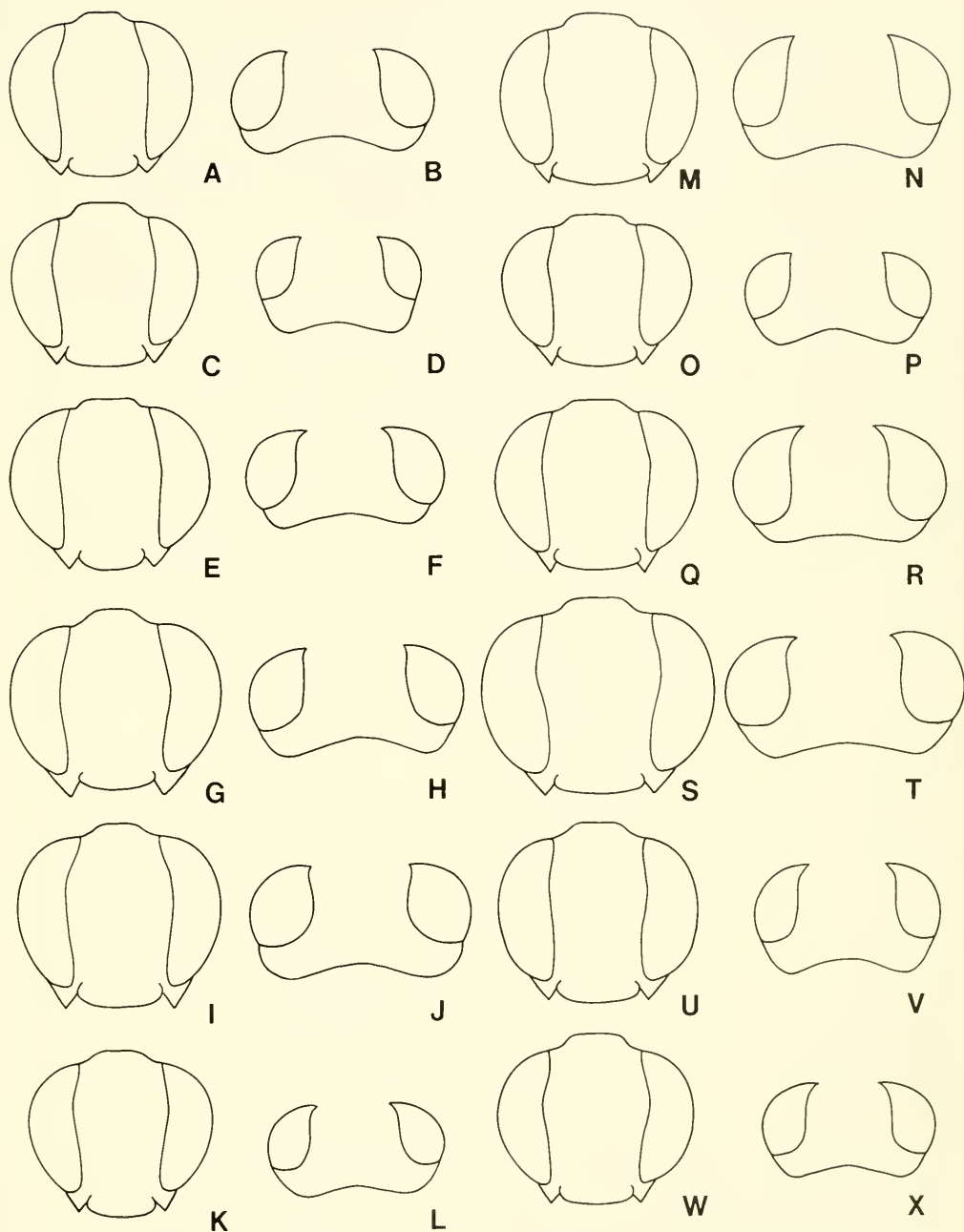


FIGURE 20. Frontal and dorsal aspects of head. A-B. *Venturia amplareolata* Wahl, C-D. *V. latrunculus* Wahl, E-F. *V. tristis* Wahl, G-H. *V. nigricoxalis* (Cush.), I-J. *V. erythropus* (Ash.), K-L. *V. compacta* Wahl, M-N. *V. anchisteus* Wahl, O-P. *V. daschi* Wahl, Q-R. *V. micheneri* Wahl, S-T. *V. fuscifemorata* Wahl, U-V. *V. scitula* Wahl, W-X. *V. sculleni* Wahl.

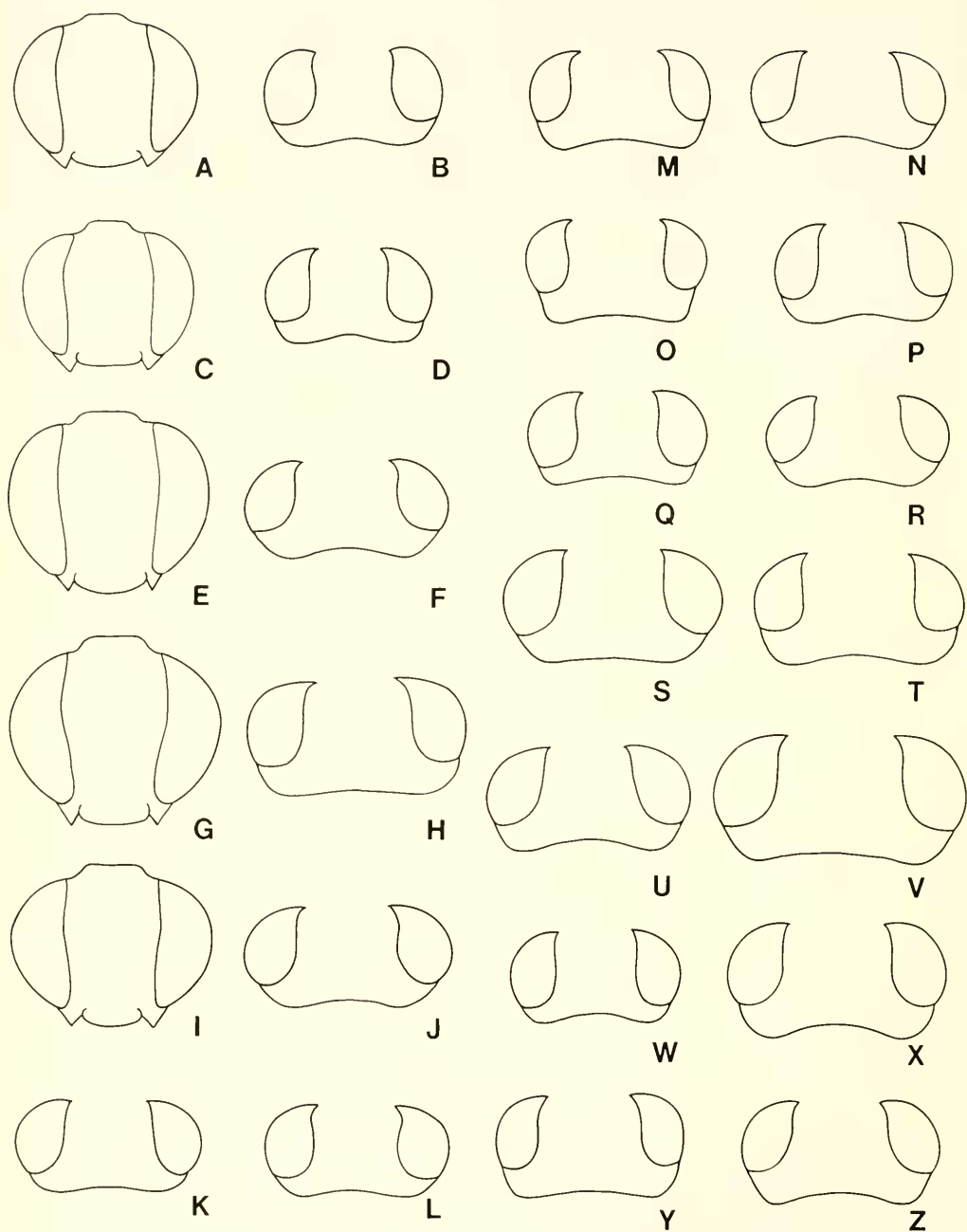


FIGURE 21. A-J, Frontal and dorsal aspects of head. A-B. *Venturia capulata* Wahl, C-D. *V. licina* Wahl, E-F. *V. floridensis* Wahl, G-H. *V. masoni* Wahl, I-J. *V. durangensis* Wahl. K-Z, Dorsal aspect of head. K. *V. portalensis* Wahl, L. *V. platyura* Wahl, M. *V. dreisbachi* Wahl, N. *V. nickelseni* Wahl, O. *V. punctata* Wahl, P. *V. longicuspis* Wahl, Q. *V. micraulax* Wahl, R. *V. hibiscellae* Wahl, S. *V. prolixa* Wahl, T. *V. taneces* Wahl, U. *V. sokanakiakorum* (Vier.), V. *V. erythrogaster* Wahl, W. *V. canescens* (Grav.), X. *V. hadra* Wahl, Y. *V. brachypropodealis* Wahl, Z. *V. finlaysonae* Wahl.

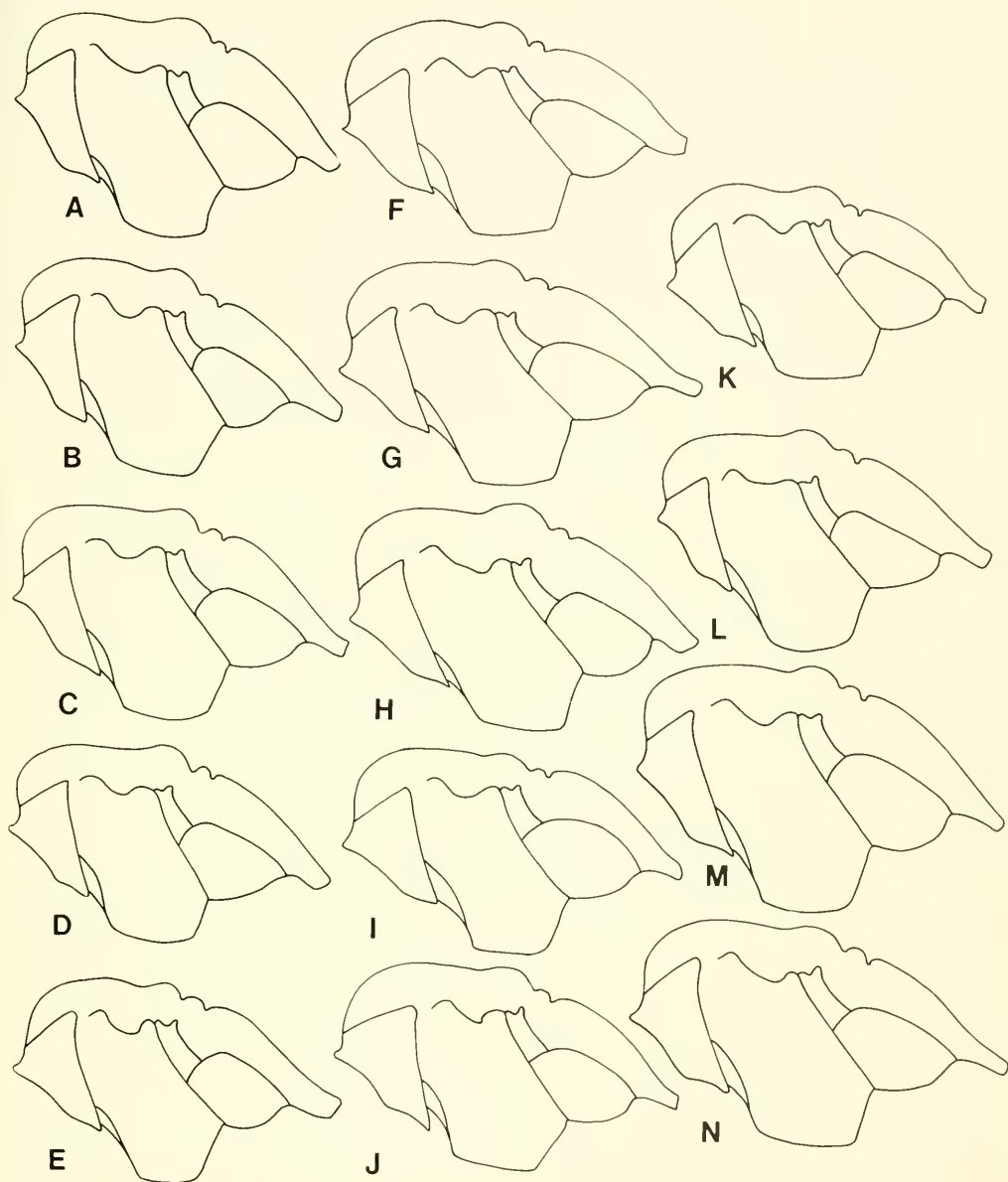


FIGURE 22. Lateral aspect of mesosoma. A. *Venturia mulleola* Wahl, B. *V. spectabilis* Wahl, C. *V. eremna* Wahl, D. *V. marjoriella* Wahl, E. *V. mayi* Wahl, F. *V. amplareolata* Wahl, G. *V. anareolata* Wahl, H. *V. gaesata* Wahl, I. *V. texana* Wahl, J. *V. australis* Wahl, K. *V. chnaura* Wahl, L. *V. pumila* Wahl, M. *V. gelechia* (Ash.), N. *V. leptogaster* (Cam.).



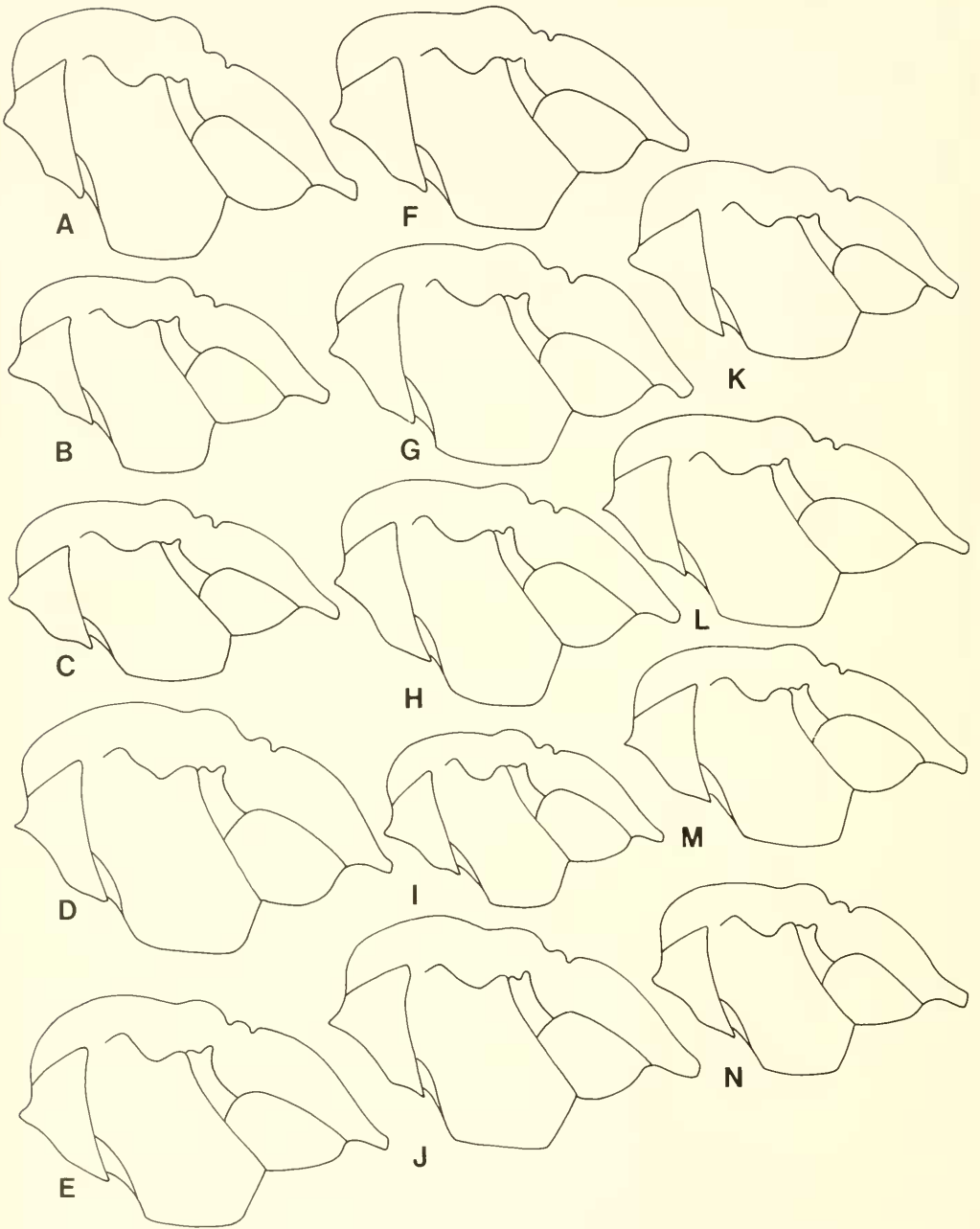


FIGURE 23. Lateral aspect of mesosoma. A. *Venturia pullata* Wahl, B. *V. dreisbachi* Wahl, C. *V. prolixa* Wahl, D. *V. hadra* Wahl, E. *V. portalensis* Wahl, F. *V. latrunculus* Wahl, G. *V. scitula* Wahl, H. *V. micraulax* Wahl, I. *V. longicuspis* Wahl, J. *V. taneces* Wahl, K. *V. sculleni* Wahl, L. *V. platyura* Wahl, M. *V. canescens* (Grav.), N. *V. nickelsenii* Wahl.

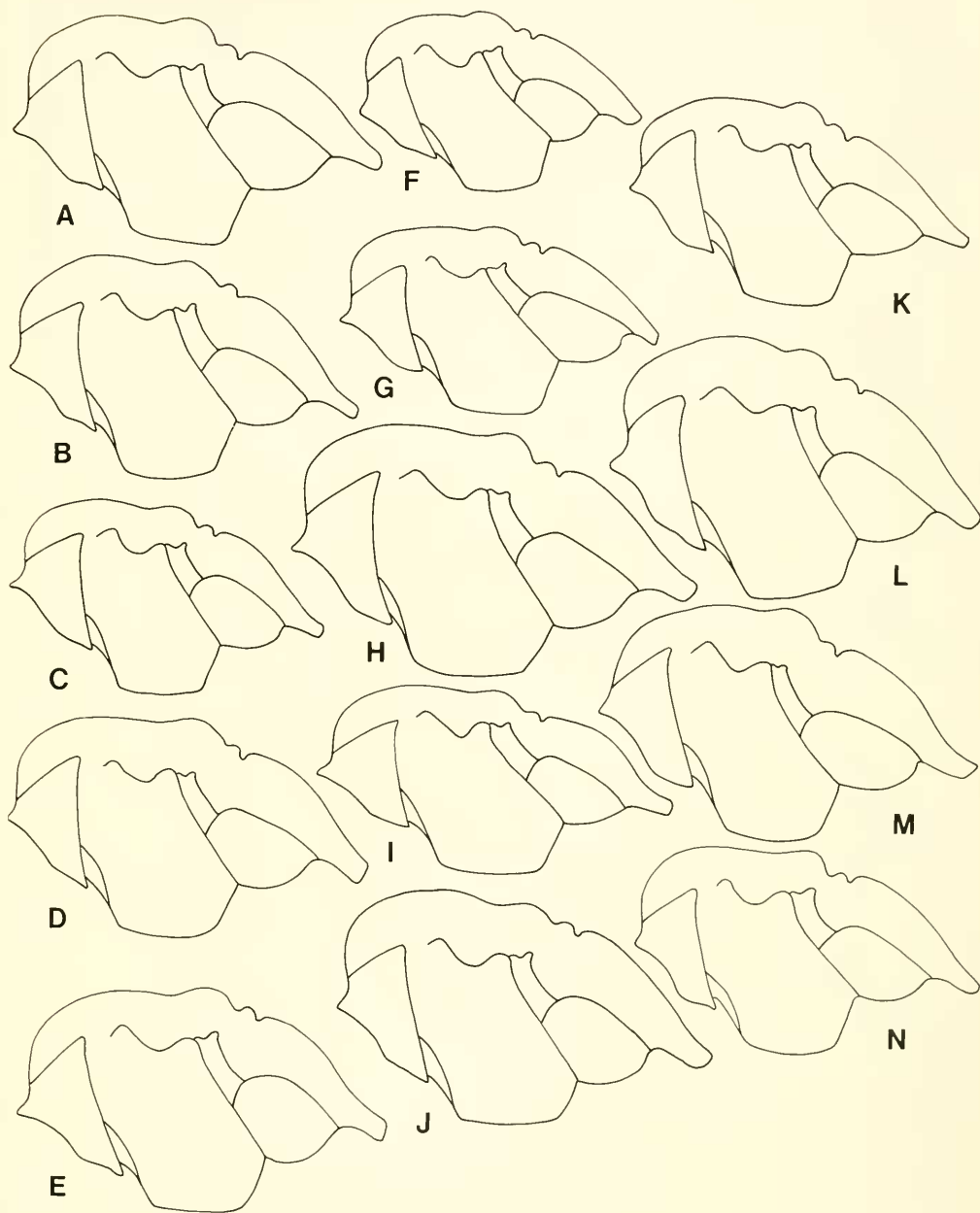


FIGURE 24. Lateral aspect of mesosoma. A. *Venturia hibiscellae* Wahl, B. *V. micheneri* Wahl, C. *V. tristis* Wahl, D. *V. nigriceoxalis* (Cush.), E. *V. fuscifemorata* Wahl, F. *V. capulata* Wahl, G. *V. erythropus* (Ash.), H. *V. daschi* Wahl, I. *V. punctata* Wahl, J. *V. finlaysonae* Wahl, K. *V. anchisteus* Wahl, L. *V. sokanakiakorum* (Vier.), M. *V. compacta* Wahl, N. *V. masoni* Wahl.

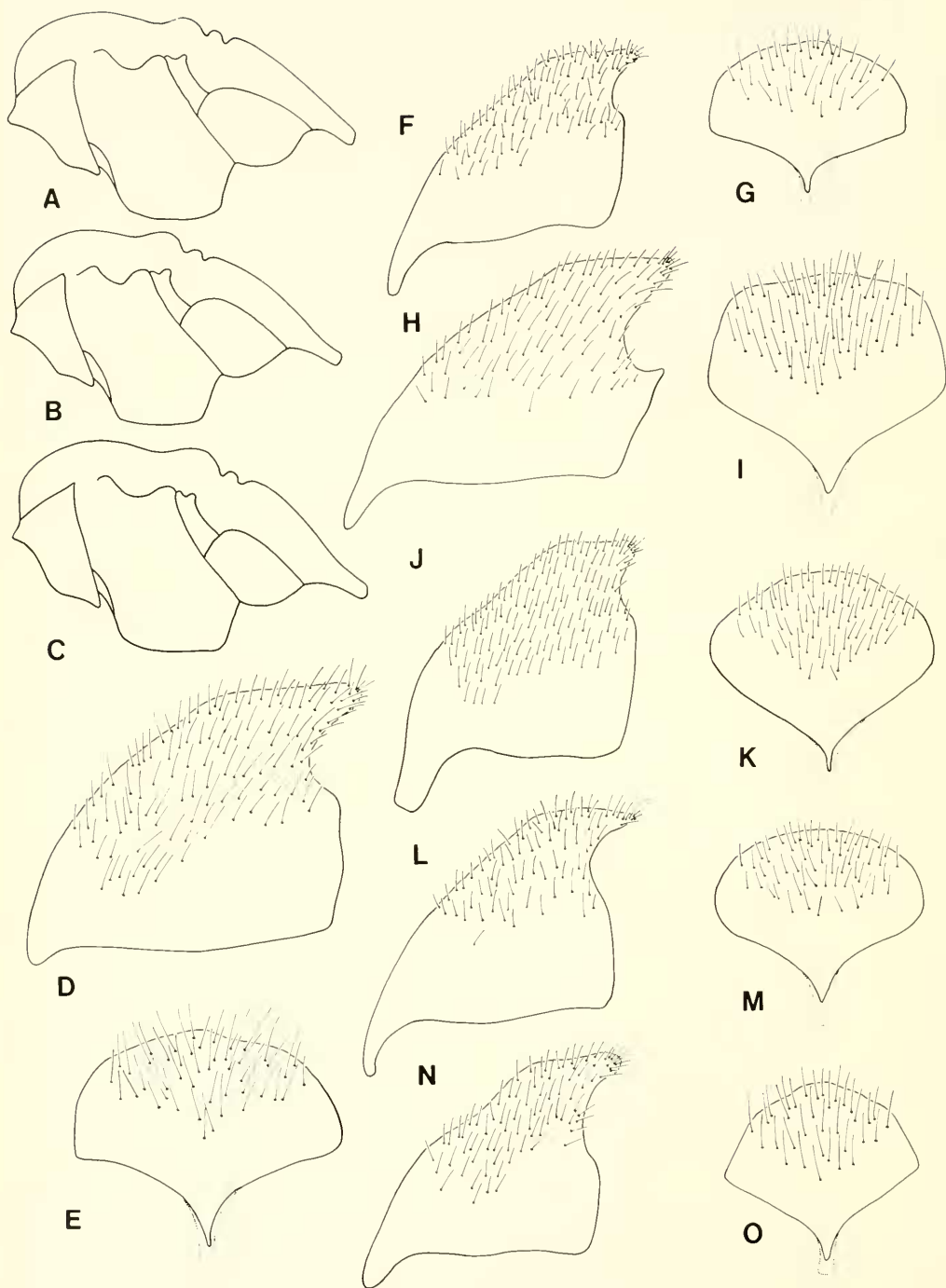


FIGURE 25. A-C, Lateral aspect of mesosoma. A. *Venturia licina* Wahl, B. *V. floridensis* Wahl, C. *V. durangensis* Wahl. D-O, Right gonoforceps (dorsal aspect) and S9 (ventral aspect). D-E. *V. fuscifemorata* Wahl, F-G. *V. licina* Wahl, H-I. *V. daschi* Wahl, J-K. *V. leptogaster* (Cam.), L-M. *V. platyura* Wahl, N-O. *V. marjoriella* Wahl.

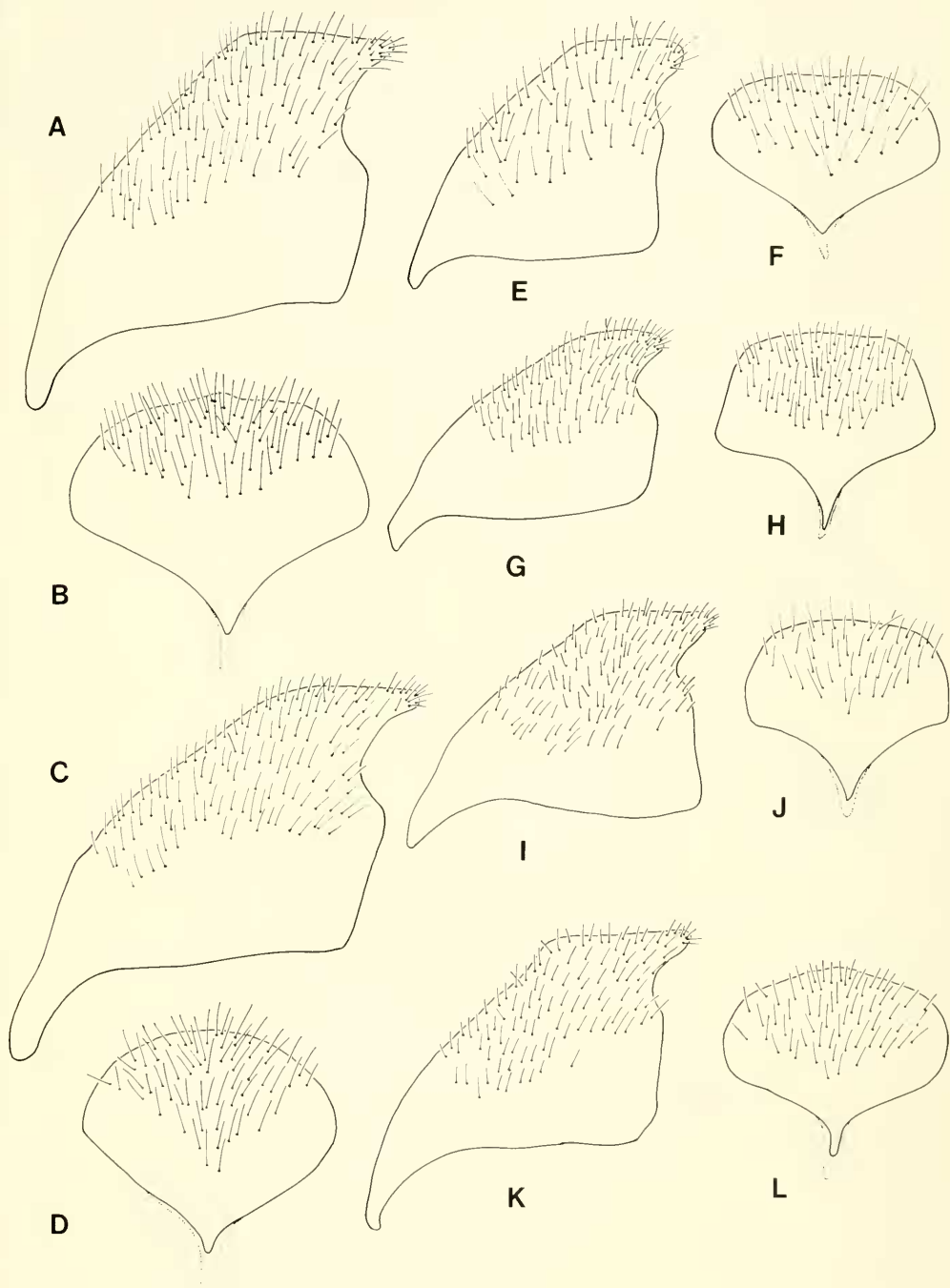


FIGURE 26. Right gonoforceps (dorsal aspect) and S9 (ventral aspect). A-B. *Venturia finlaysonae* Wahl, C-D. *V. hadra* Wahl, E-F. *V. anareolata* Wahl, G-H. *V. micraulax* Wahl, I-J. *V. longicuspis* Wahl, K-L. *V. portalensis* Wahl.



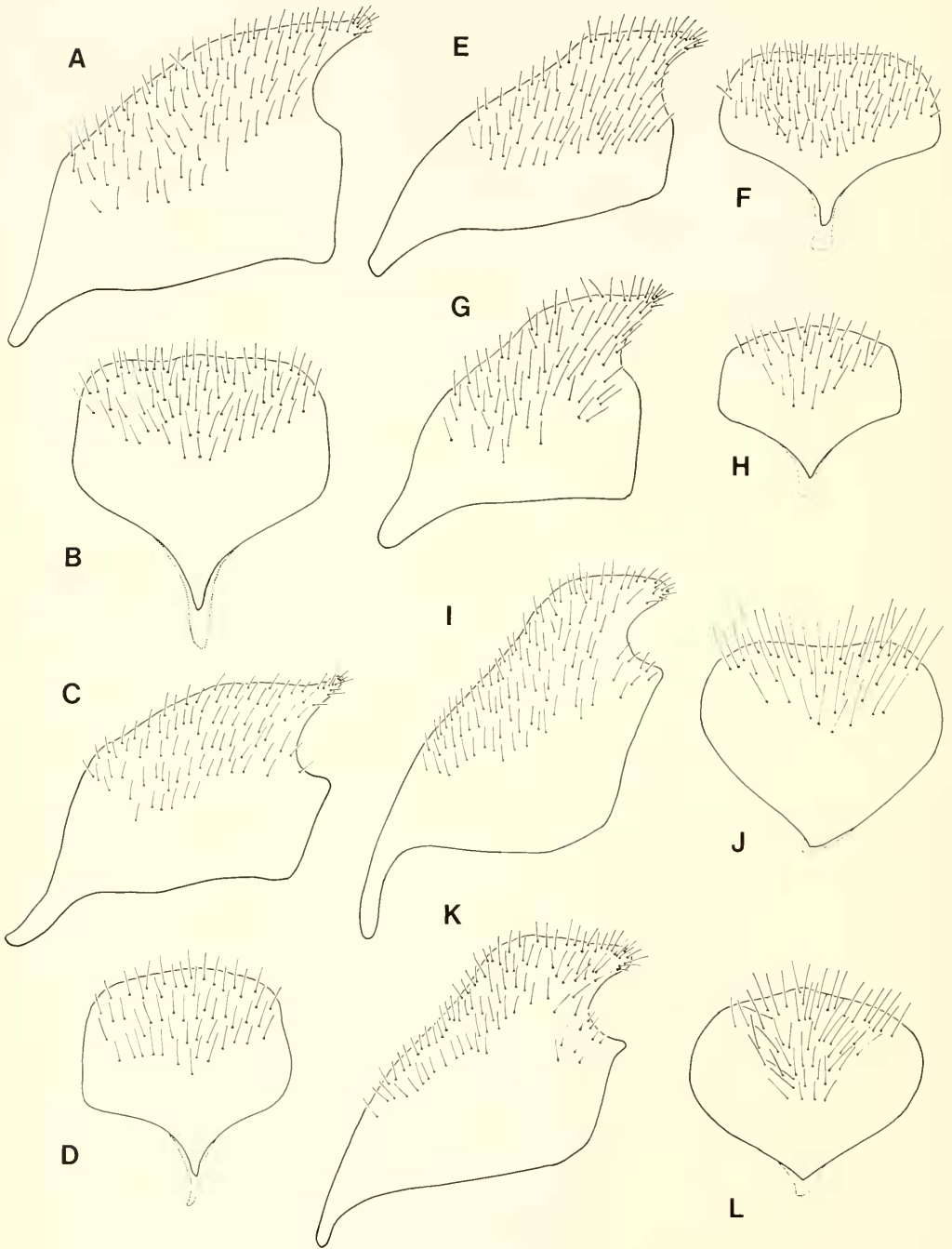


FIGURE 27. Right gonoforceps (dorsal aspect) and S9 (ventral aspect). A-B. *Venturia scitula* Wahl, C-D. *V. scitula* Wahl (Arizona specimen), E-F. *V. sculleni* Wahl, G-H. *V. australis* Wahl, I-J. *V. nigriscapus* (Vier.), K-L. *V. macilenta* (Cress.).

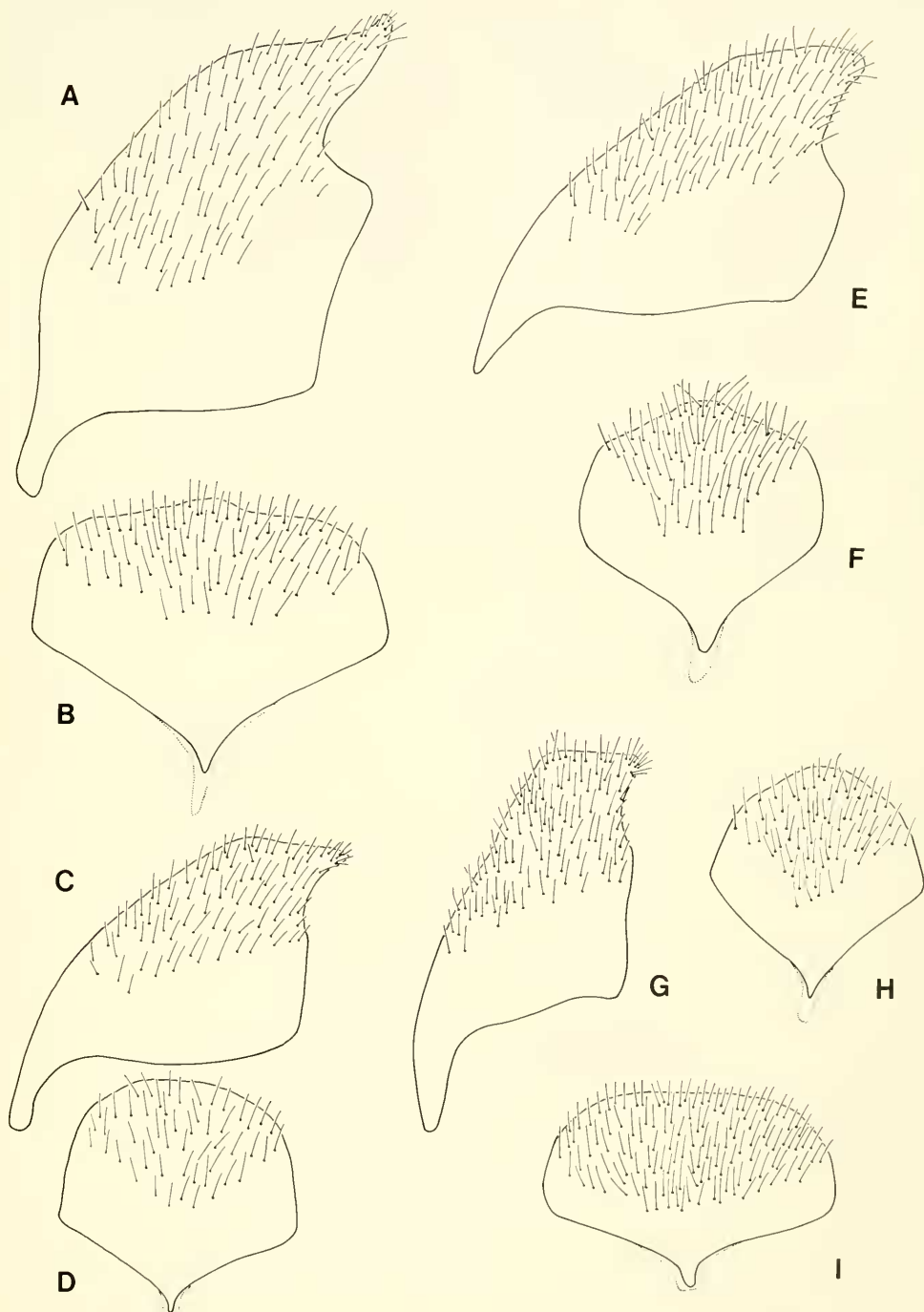


FIGURE 28. A-H, Right gonoforceps (dorsal aspect) and S9 (ventral aspect). A-B. *Venturia erythrogaster* Wahl, C-D. *V. floridensis* Wahl, E-F. *V. nigricoxalis* (Cush.), G-H. *V. sokanakiakorum* (Vier.). I. S9 (ventral aspect) of *V. punctata* Wahl.

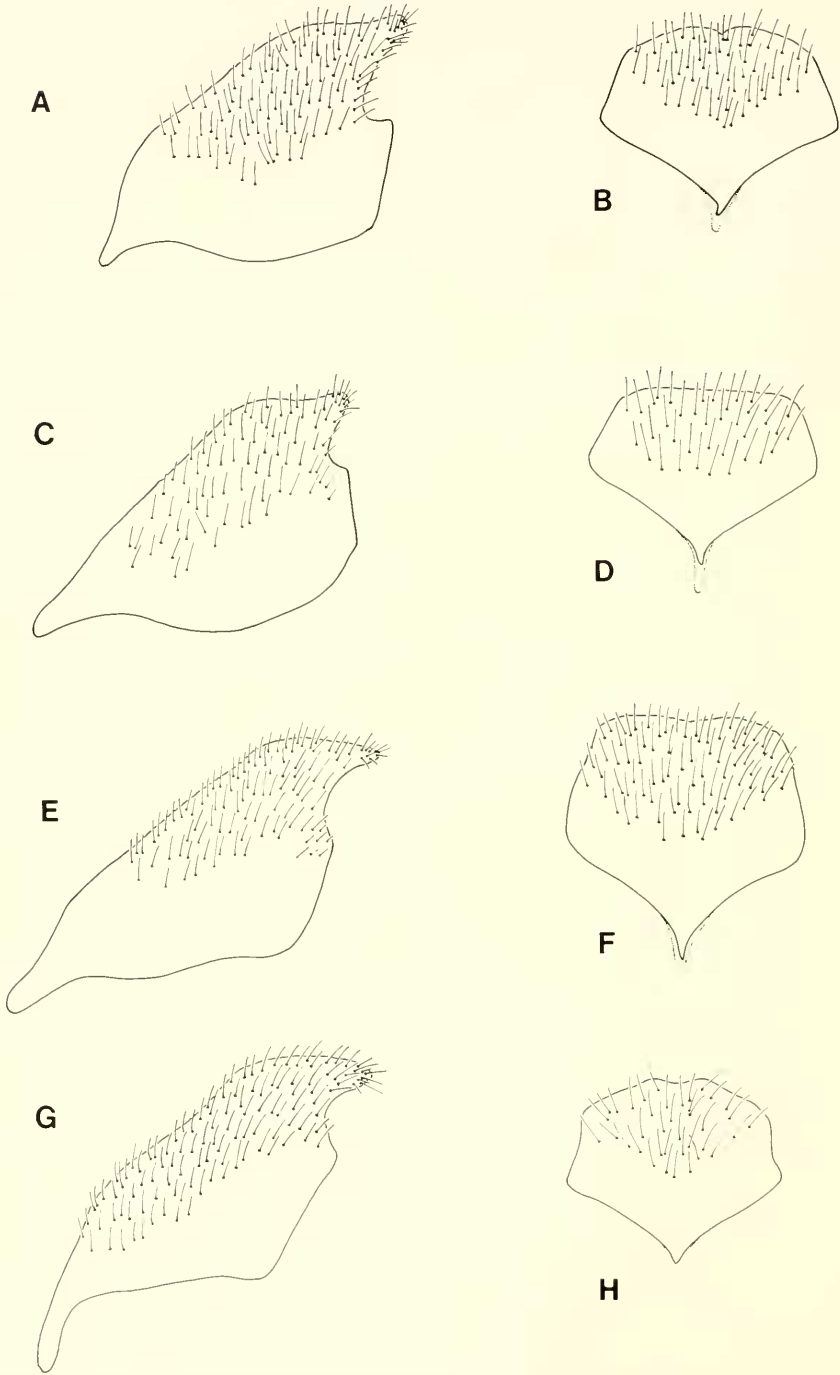


FIGURE 29. Right gonoforceps (dorsal aspect) and S9 (ventral aspect). A-B. *Venturia eremna* Wahl, C-D. *V. amplareolata* Wahl, E-F. *V. erythropus* (Vier.), G-H. *V. masoni* Wahl.